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GEOLOGICAL SURVEY

SCHLUMBERGER SOUNDING RESULTS IN THE HUECO BOLSON, NEW MEXICO

By

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#### INTRODUCTION

In 1983 the U.S. Geological Survey made 54 Schlumberger soundings in part of the Hueco Bolson in southern New Mexico (fig. 1). The soundings were made as part of a study to determine the potable ground water potential of the area.

Sediments of the Hueco Bolson are composed chiefly of discontinuous layers of clay, sand, and gravel of Tertiary age (Knowles and Kennedy, 1958). Because of the nature of the source rocks in the Franklin and Organ mountains, sand and gravel are more abundant on the west side of the bolson.

The purpose of this report is to present the Schlumberger sounding data and interpretation. In addition 2 geoelectric cross sections and a depth to saltwater map are presented and discussed.

#### SCHLUMBERGER SOUNDINGS

Figure 1 is a map showing the location and identifying number of the 54 Schlumberger soundings. All the soundings were made along existing roads or trails. The soundings were automatically processed and interpreted as shown in the graphs in the Appendix (Zohdy, 1973;

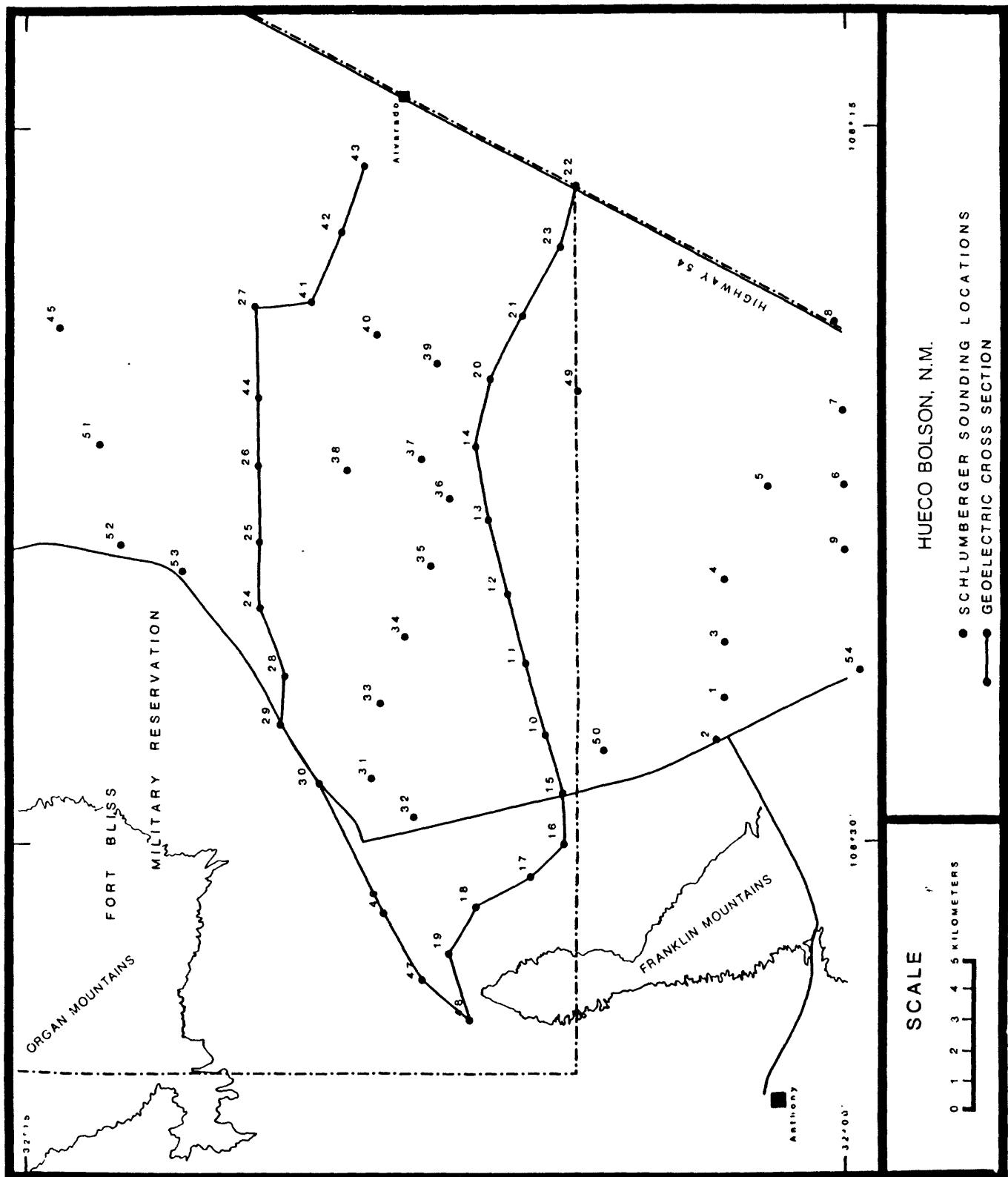


Figure 1. Schlumberger sounding location map.

1975). The data were interpreted on a Hewlett Packard (HP) 9845B desk top computer using a computer program of Zohdy (1973) modified to use a digital filter developed by O'Neill (1975) in place of the Ghosh (1971) filter. It was necessary to correct soundings 16, 17, 19, and 48 for the effects of road curvature. This was done in a manner similar to that described by Zohdy and Bisdorf (1982). Corrected soundings have a "-C" appended to their titles. Since the majority of the soundings were made on the Fort Bliss military reservation the soundings in the appendix are labeled from Fort Bliss 1 thru Fort Bliss 54. For each sounding the data in the Appendix include:

- 1) A log-log plot of the field data points in which the "0"'s represent the individual data points. Each set of data points measured with the same potential electrode spacing are connected with a solid line. The current electrode half spacings ( $AB/2$ ), originally measured in feet, have been converted to meters.
- 2) A tabulation of the  $AB/2$  spacings in meters and their corresponding apparent resistivities in ohm-m.
- 3) A log-log plot of the output of the automatic inversion program in which:
  - a) The continuous curve represents the shifted-digitized field curve (Bisdorf and Zohdy, 1979)
  - b) The step-function curve represents the distribution of interpreted resistivity with depth (interpreted model).
  - c) The plus (+) symbols represent points on a theoretical curve calculated from the interpreted model to show how well the model represents the shifted-digitized field curve.
- 4) A tabulation of the interpreted depths in meters and the interpreted resistivities in ohm-m. The last layer depth is an arbitrarily large number and is intended to represent an infinite depth.

Soundings 4, 7, 8, 9, 20, 21, 22, and 30 had cusps or other

distortions that were obviously caused by lateral geologic features or cultural influences. These cusps were manually smoothed before interpretation so that the inversion program could better fit the undistorted portions of the soundings. Smoothed soundings have a "-S" appended to their titles on the sounding interpretation plots in the appendix. Other soundings may be distorted, but it was not necessary to smooth them to improve the inversion.

#### GEOELECTRIC CROSS SECTIONS

Figures 2 and 3 show geoelectric cross sections constructed from the interpreted models of the appropriate soundings. The cross sections were generated in a manner similar to that described by Bisdorf (1982, pp. 5-7). The figures consist of 2 parts, a nonvertically exaggerated cross section and the same cross section vertically exaggerated four times. Because of plotter limitations, the nonvertically exaggerated cross section does not have the detail of the vertically exaggerated cross section and is only presented to show the horizontal character of the cross sections. On the right hand side of the figures is a scale which relates interpreted resistivities to shades of gray. Darker shades indicate higher resistivities whereas lighter shades indicate lower resistivities. The triangles and numbers at the top of each cross section indicate the sounding locations and numbers. At the bottom of each cross section there is a wavy line which approximately represents sounding probing depth and is related to the length of the soundings and the geoelectrical structure.

For the purpose of a preliminary evaluation of the resistivity data the following chart giving resistivity and probable lithology and water quality correlations will be used:

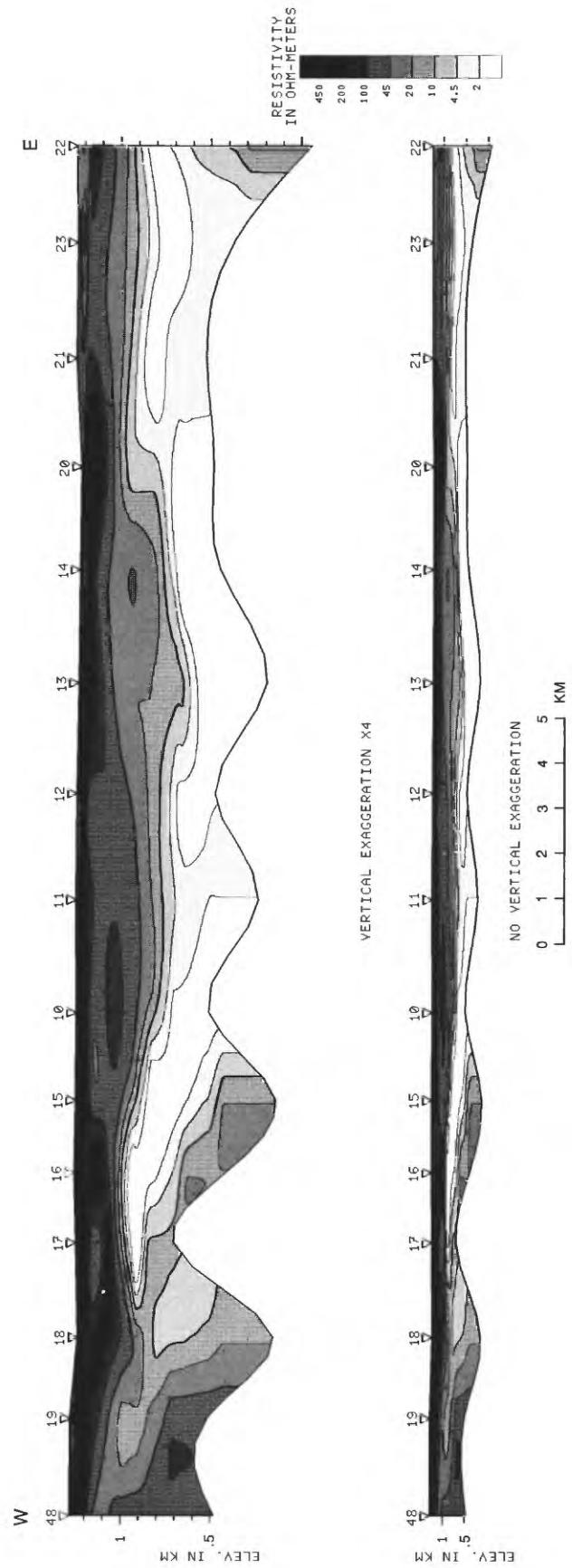


Figure 2. Computer-generated geoelectric cross section.

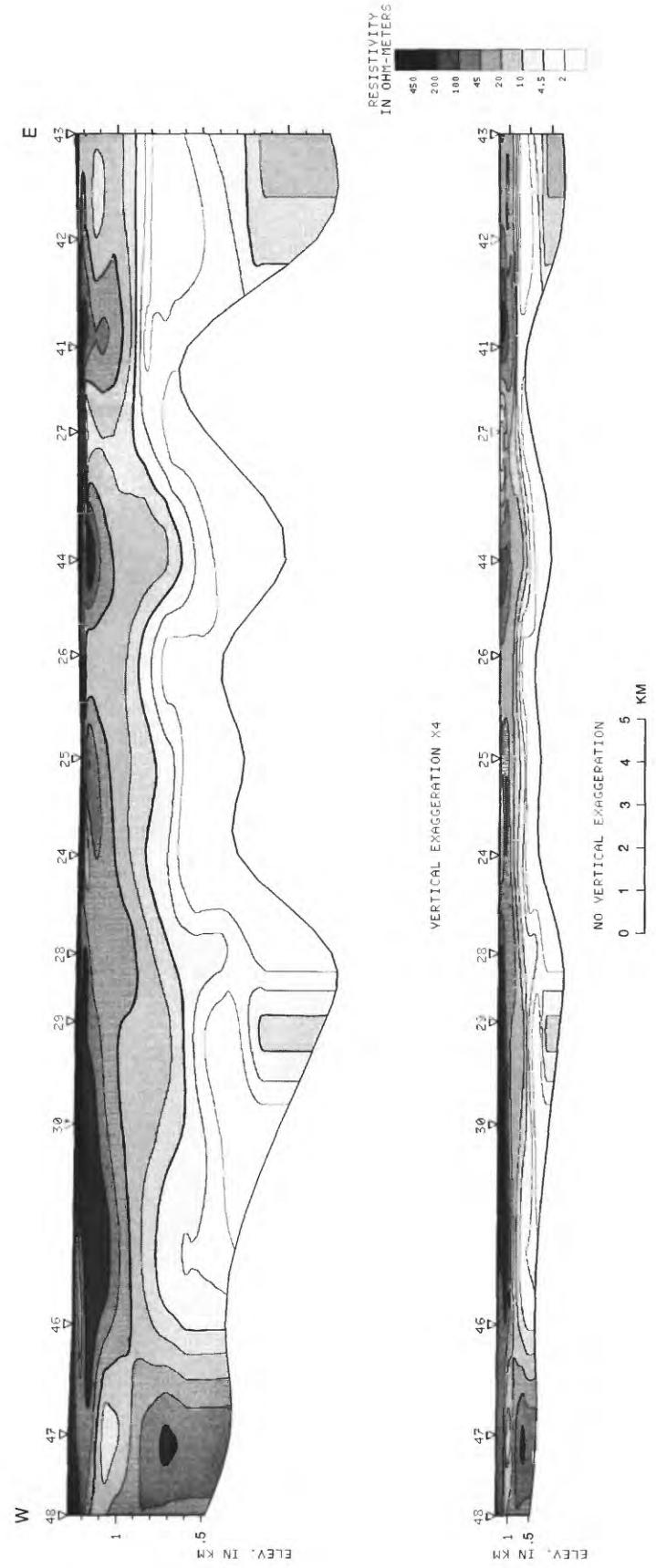


Figure 3. Computer-generated geoelectric cross section.

<10 ohm-m	clay or saltwater-saturated sediment
10-45 ohm-m	brackish-water-saturated sediment
45-100 ohm-m	sand and gravel with potable ground water
>200 ohm-m	dry sand and gravel or impermeable rock

Figure 2 shows an east-west cross section about 30 km in length. This cross section was constructed from the interpretations of 15 soundings. Interpretation of this cross section using the above chart gives a resistive (>200 ohm-m) near surface layer of dry sand and gravel about 50 to 120 m thick which extends from sounding 48 in the west, eastward to about sounding 20. This layer is underlain by a layer of (potentially) potable water-saturated sand and gravel ranging in thickness from less than 50 to about 300 m. The thickest portion of this layer, the most favorable zone for potable ground water, extends from about sounding 15 to about sounding 12. This layer is underlain by a layer of brackish water saturated sediments (10 to 45 ohm-m) ranging in thickness from less than 100 to about 450 m. Although this layer most likely contains brackish water and clay, it could still contain potable water. From sounding 17 on the west to the easternmost extent of the cross section a layer of saltwater-saturated sediment or clay is present. This layer is about 100 m to greater than 600 m thick and ranges in depth from about 250 to 600 m. In places this layer has resistivities of less than 1 ohm-m indicating the presence of a brine.

Figure 3 shows another east-west cross section about 32 km in length constructed from 14 sounding interpretations. Interpretation of this cross section shows a dry sand and gravel layer in the upper 20 m. This layer is thicker in the area from sounding 29 to sounding 46 attaining a maximum thickness of about 110 m under sounding 30. The (potentially) potable ground water saturated layer is present from

sounding 48 to 25 and under soundings 44 and 41. This layer varies in thickness from about 100 to about 300 m. The most promising areas for potable groundwater are between soundings 28 and 25 and beneath soundings 48 and 47. The area under sounding 28 appears to have the greatest thickness of this layer. The brackish water saturated layer is more prevalent on this cross section than the last. This is due to a decrease in either grain size or water quality. This layer typically underlies the potable ground water layer and can be as thick as 400 m. A layer of saltwater-saturated sediment or clay underlies the area from about sounding 46 on the west to the easternmost extent of the cross section. This layer ranges in thickness from about 400 to greater than 800 m. The depth to the top of this layer ranges from about 320 to 600 m. Under soundings 29, 42, and 43 it appears that the soundings are "seeing" a resistive basement at a depth of about 1 km through the saltwater-saturated layer. This conclusion is based on one point on those soundings and care should be taken not to put too much emphasis on its interpreted depth.

#### DEPTH TO THE SALTWATER SATURATED LAYER

Figure 4 is a map of the depth to the top of the low resistivity (<10 ohm-m) saltwater-saturated layer. This map was constructed by visually determining the depth to 10 ohm-m's on the individual sounding interpretations. These data were combined with the coordinates of the soundings and gridded using a minimum curvature algorithm (Webring, 1981). The grid values were contoured as shown in figure 4.

The most interesting feature of this map is the more or less linear depression in the top of the 10 ohm-m material. This depression trends southeast-northwest and points toward a topographic low between

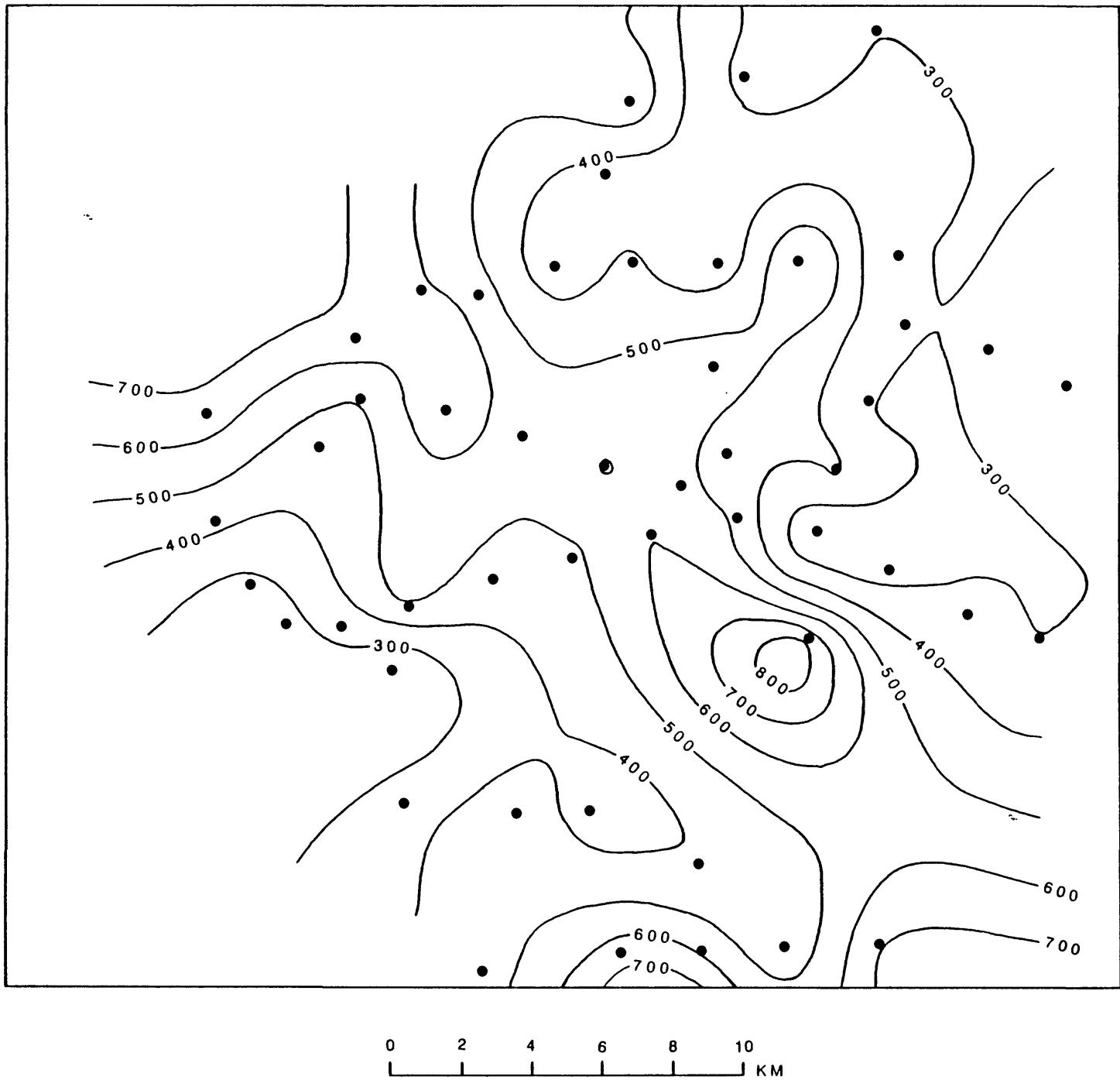


Figure 4. Depth to low resistivity (<10 ohm-m) saltwater-saturated sediment.  
Contours represent depth in meters.

the Franklin Mountains and the Organ Mountains. This depression may be an indication of an ancient stream channel. This trend has the greatest potential for thick sequences of sand and gravel and hence potable ground water.

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#### SUMMARY

The resistivity data and geoelectric cross sections indicate probable areas of potable ground water. These areas are relatively large and if they contain potable water they represent a significant resource. The presence of a depression in the depth to the saltwater saturated layer makes that area a good target for ground water exploration. If the materials above the depression are appropriate for an aquifer then the greatest thickness of ground water will most likely be found here.

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- O'Neill, D. J., 1975, Improved linear filter coefficients for application

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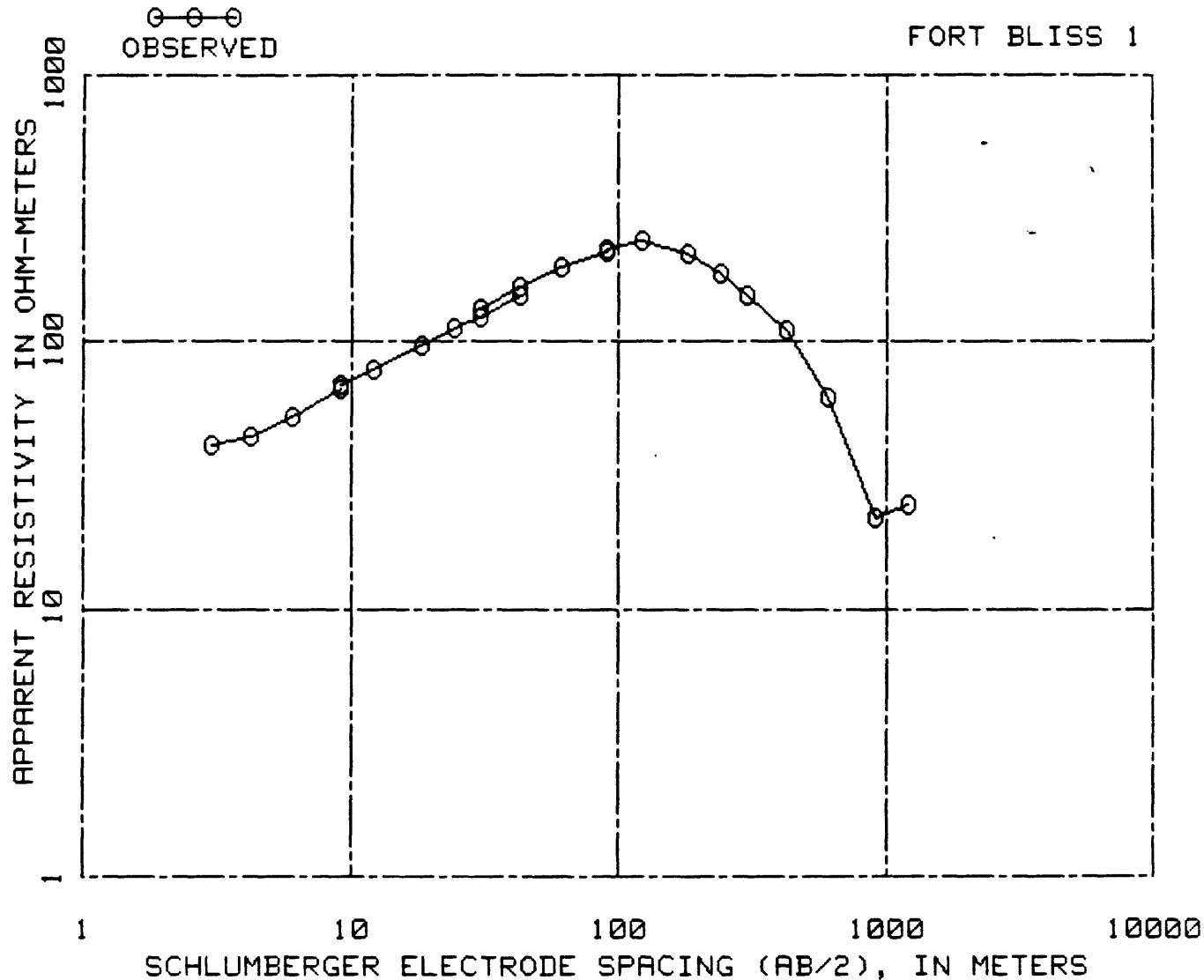
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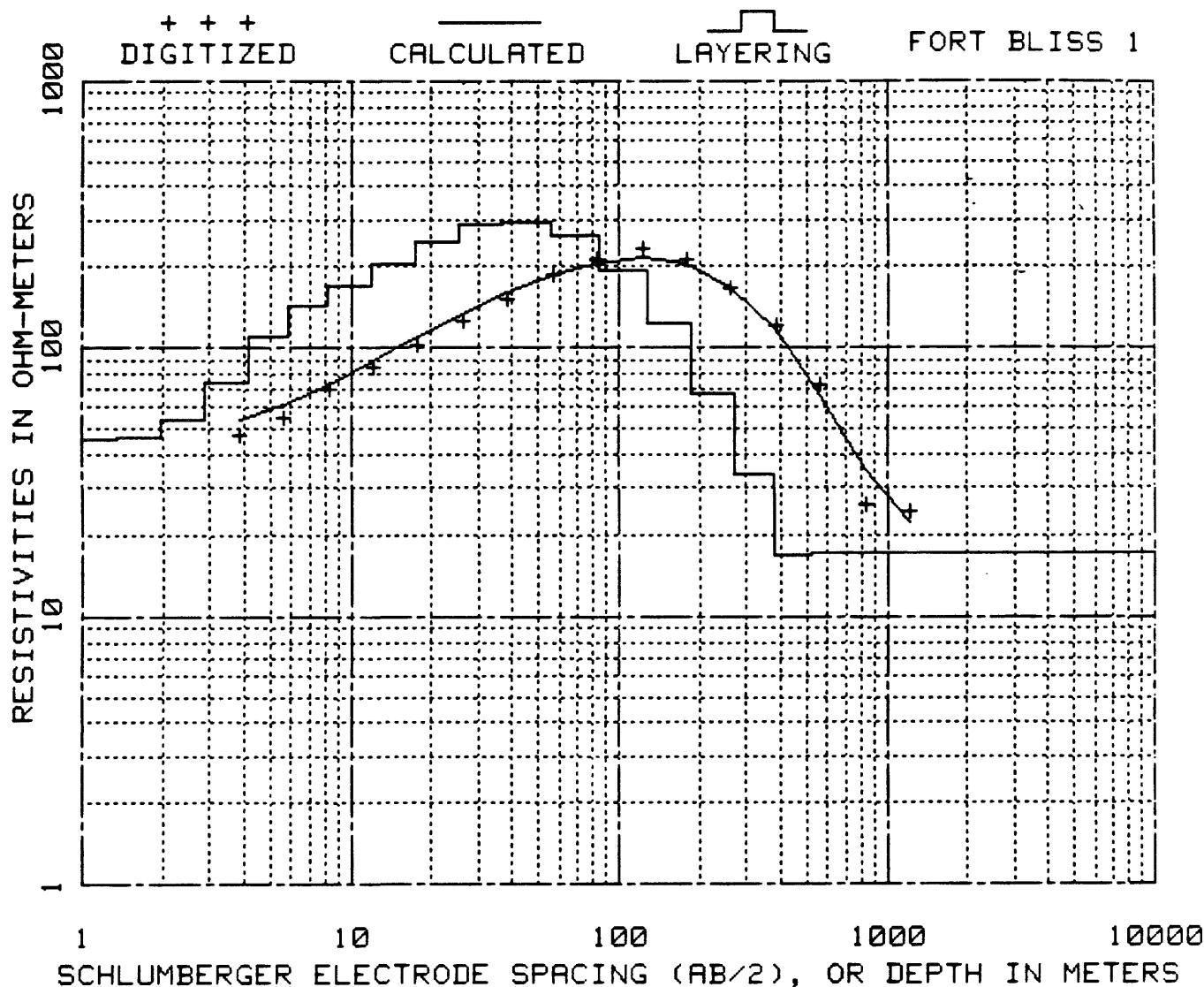
Zohdy, A. A. R., 1973, A computer program for the automatic interpretation of  
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Springfield, Va. 22161, as U.S. Geological Survey Report USGS-GD-74-017,  
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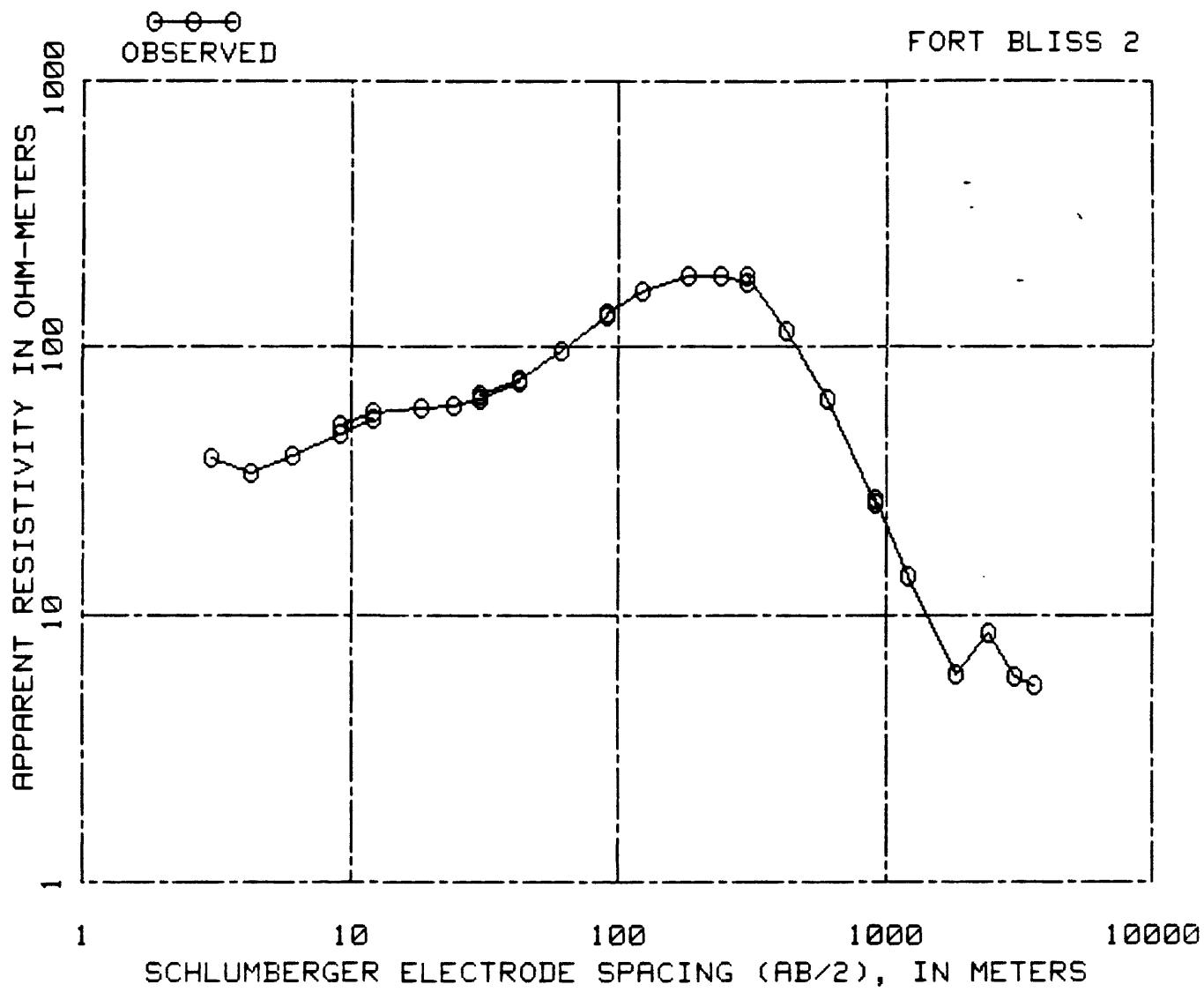
Zohdy, A. A. R., and Bisdorf, R. J., 1982, Schlumberger soundings in the  
Medicine Lake Area, California: U. S. Geological Survey Open-File Report  
82-887, 162 p.

**APPENDIX**



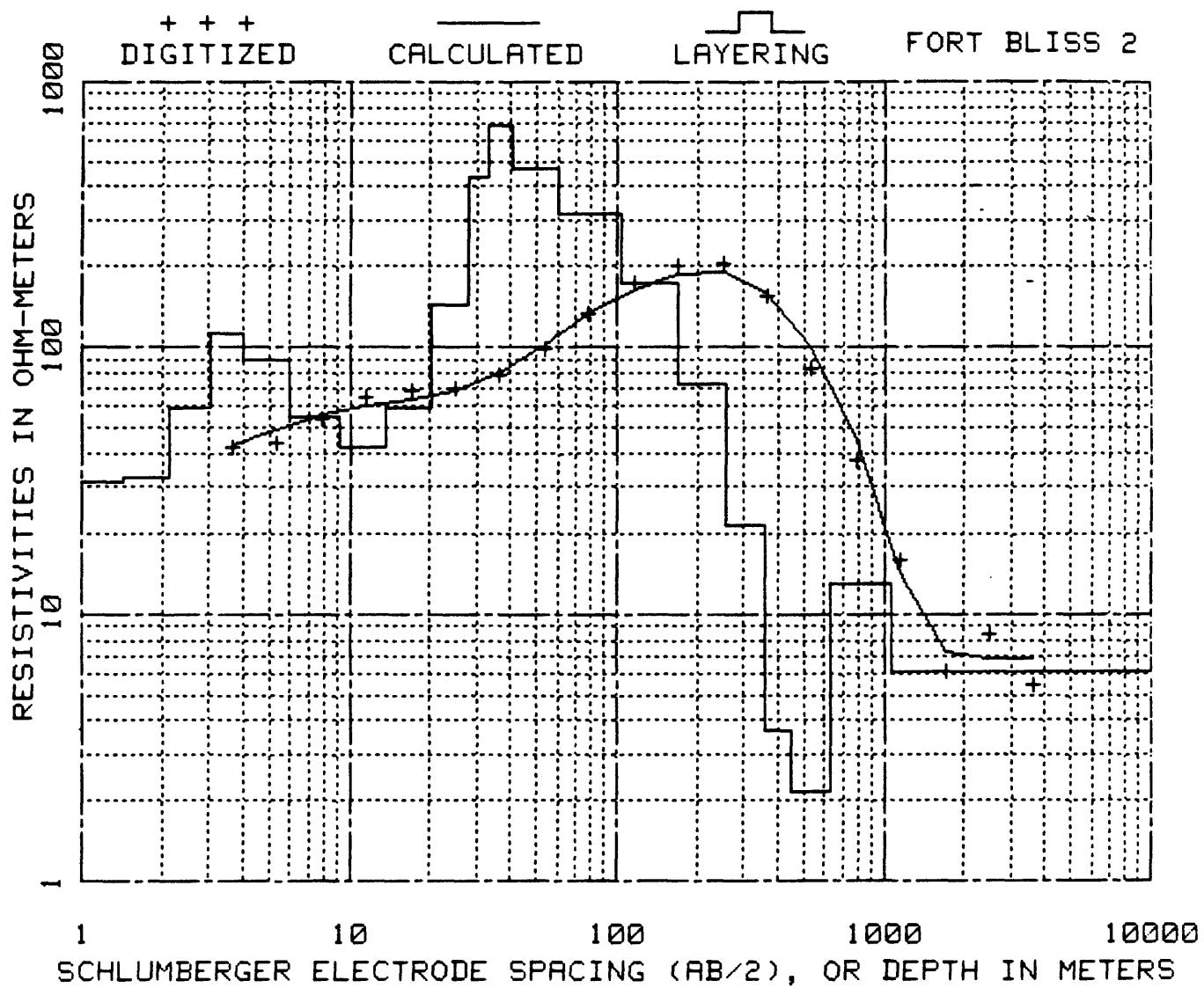


INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.29	47.16	17.25	205.28
.42	47.21	25.14	249.61
.62	47.02	37.01	287.31
.91	46.53	55.47	294.85
1.34	45.80	84.21	261.58
1.97	46.61	126.78	194.13
2.89	53.72	186.84	122.68
4.16	74.32	268.34	67.97
5.86	109.98	376.33	33.73
8.27	143.21	523.92	16.94
11.89	170.33	1000522.92	17.29

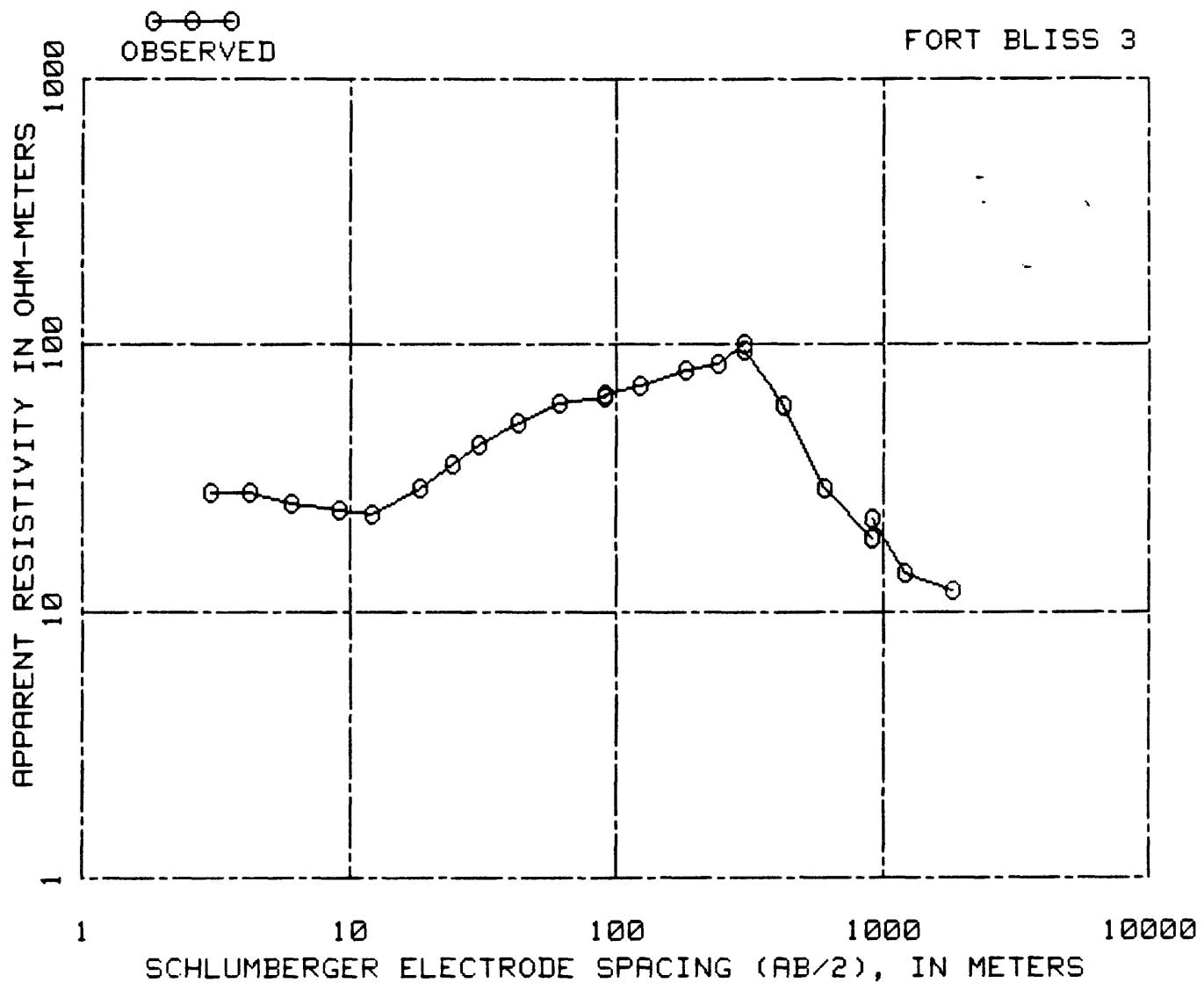


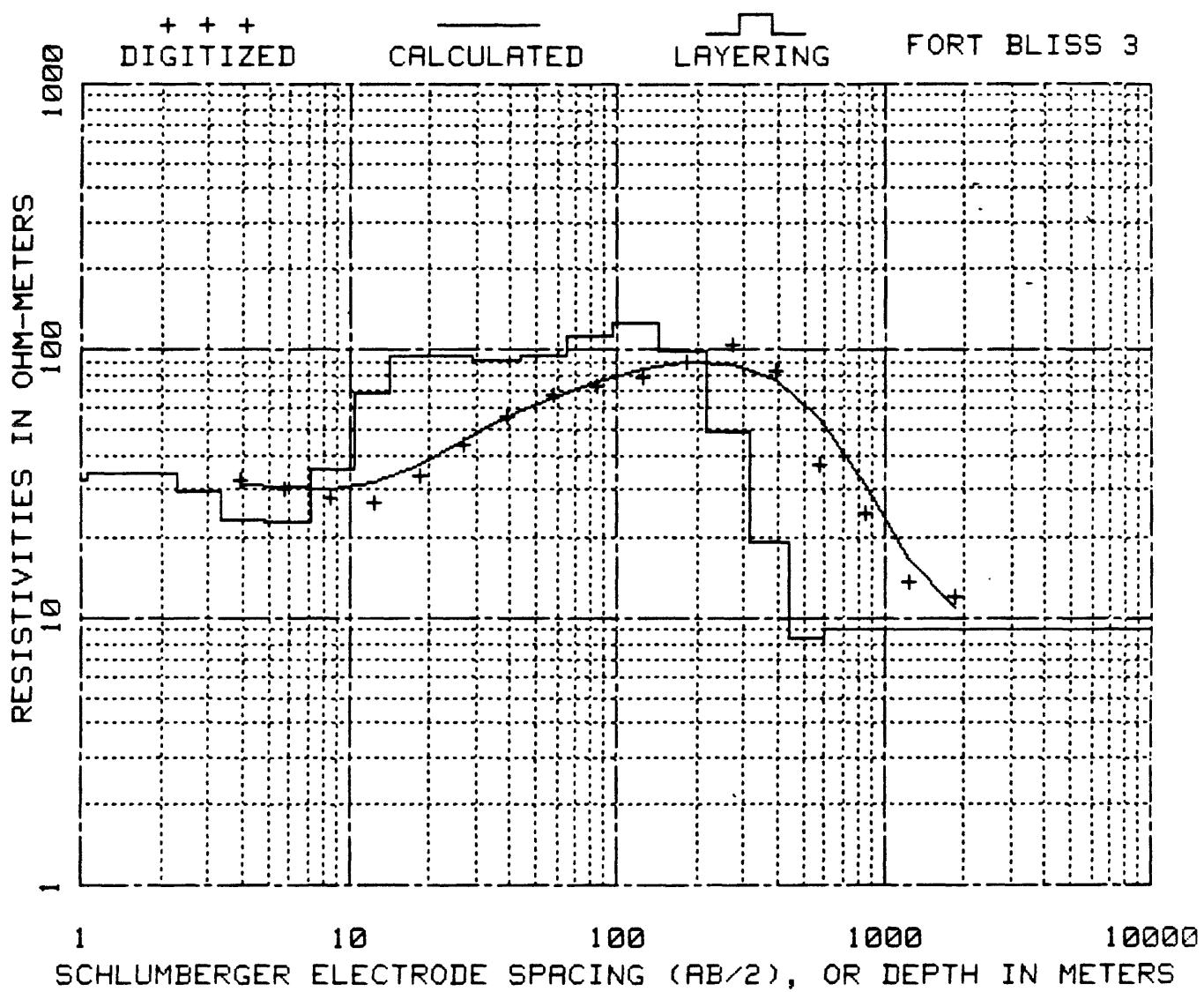
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
3.05	38.50
4.27	33.60
6.10	39.00
9.14	47.80
12.19	54.50
9.14	51.00
12.19	57.50
18.29	59.50
24.38	60.50
30.48	63.50
42.67	74.00
30.48	67.00
42.67	76.00
60.96	97.00
91.44	131.00

AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
91.44	134.00
121.92	161.00
182.88	185.00
243.84	185.00
304.80	174.00
304.80	183.00
426.72	115.00
609.60	64.00
914.40	25.00
914.40	27.00
1219.20	14.00
1828.80	6.00
2438.40	8.50
3048.00	5.90
3657.60	5.44

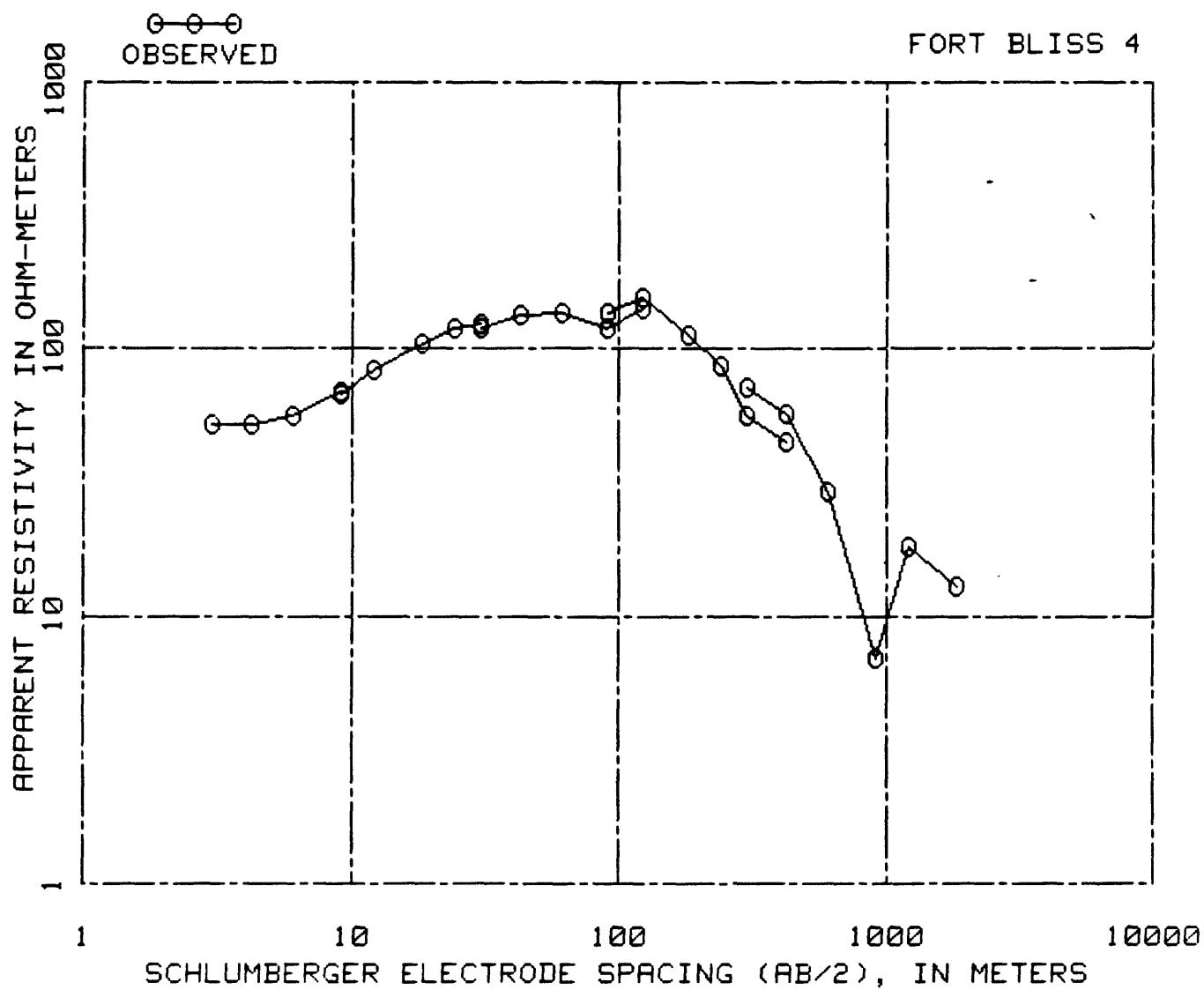


INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.21	39.34	20.31	59.68
.31	39.67	27.64	142.90
.45	40.88	33.18	436.85
.67	41.63	40.63	685.02
.98	38.06	60.72	470.58
1.43	31.16	103.16	315.36
2.11	32.26	169.85	173.10
3.00	59.50	257.27	72.61
4.04	113.01	357.87	21.71
5.99	89.68	450.79	3.67
9.10	55.10	634.95	2.15
13.62	41.93	1064.77	12.85
		10001063.77	6.15

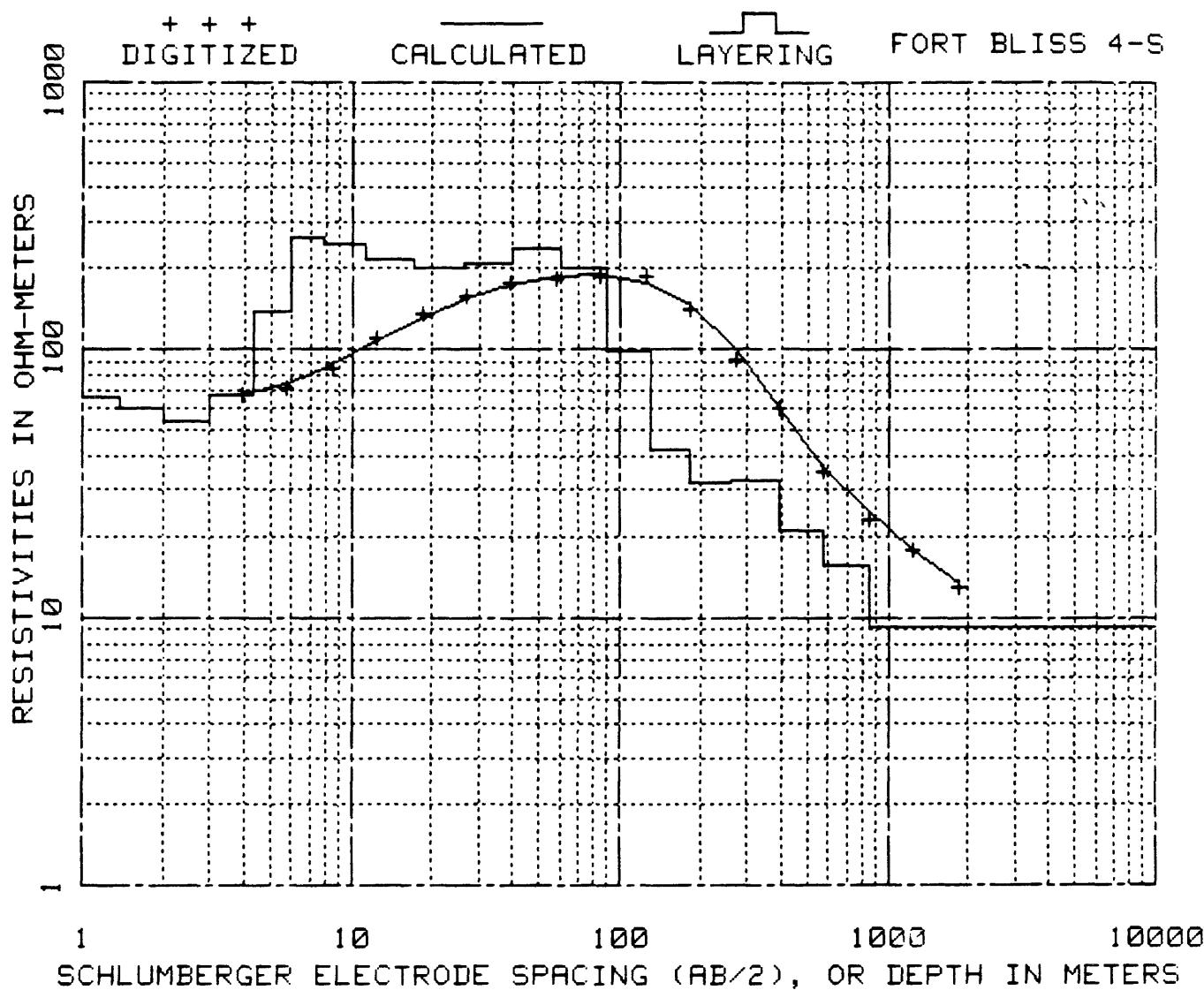




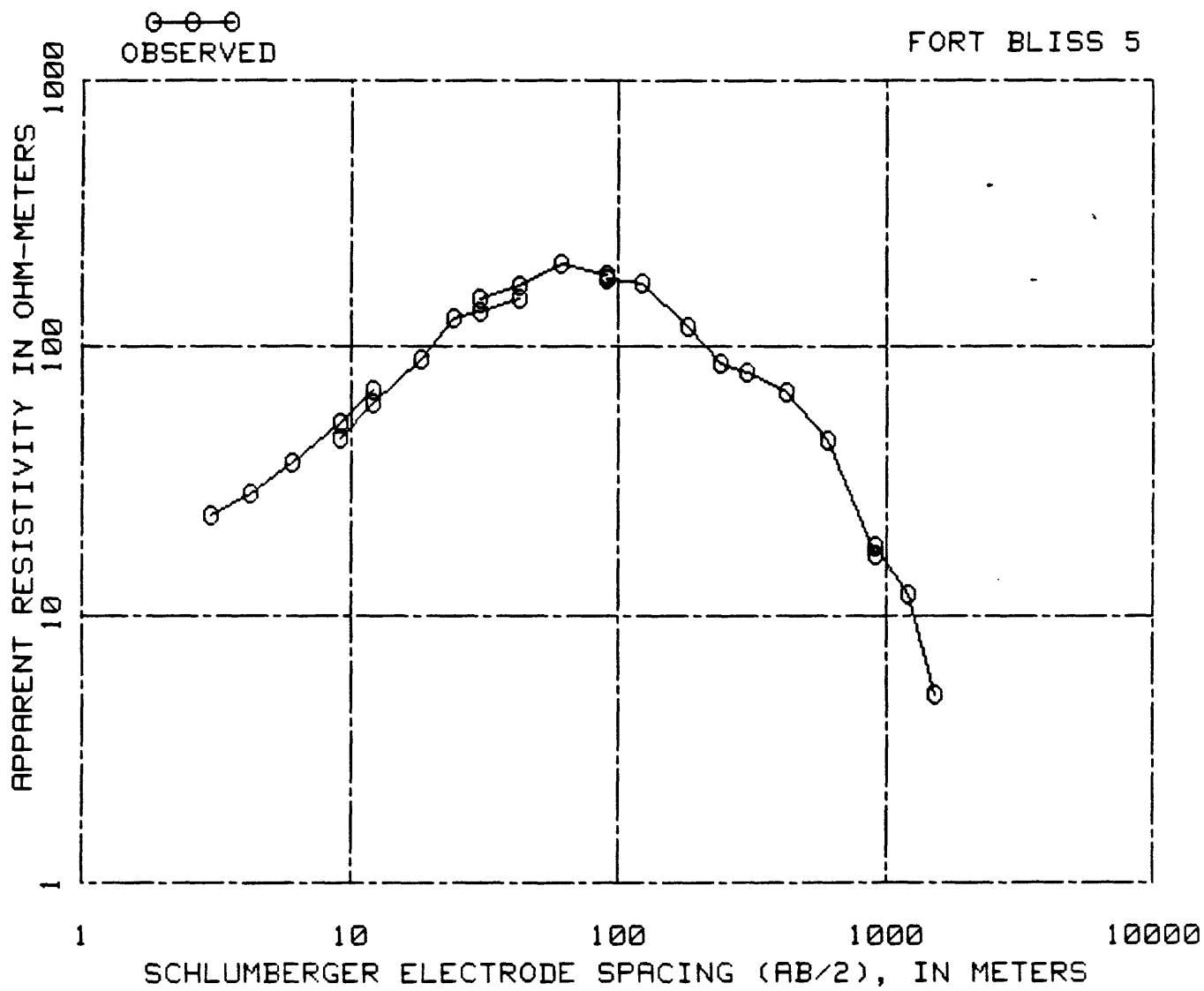
INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.23	32.72	14.27	69.21
.33	32.48	19.68	95.72
.49	32.18	28.76	95.65
.72	32.04	43.35	91.92
1.06	32.66	65.32	95.85
1.55	34.09	97.12	112.95
2.27	34.09	143.98	126.16
3.33	29.42	216.42	97.93
4.87	23.31	316.32	49.43
7.15	22.95	438.02	19.19
10.41	36.02	597.03	8.43
		1000596.03	9.11

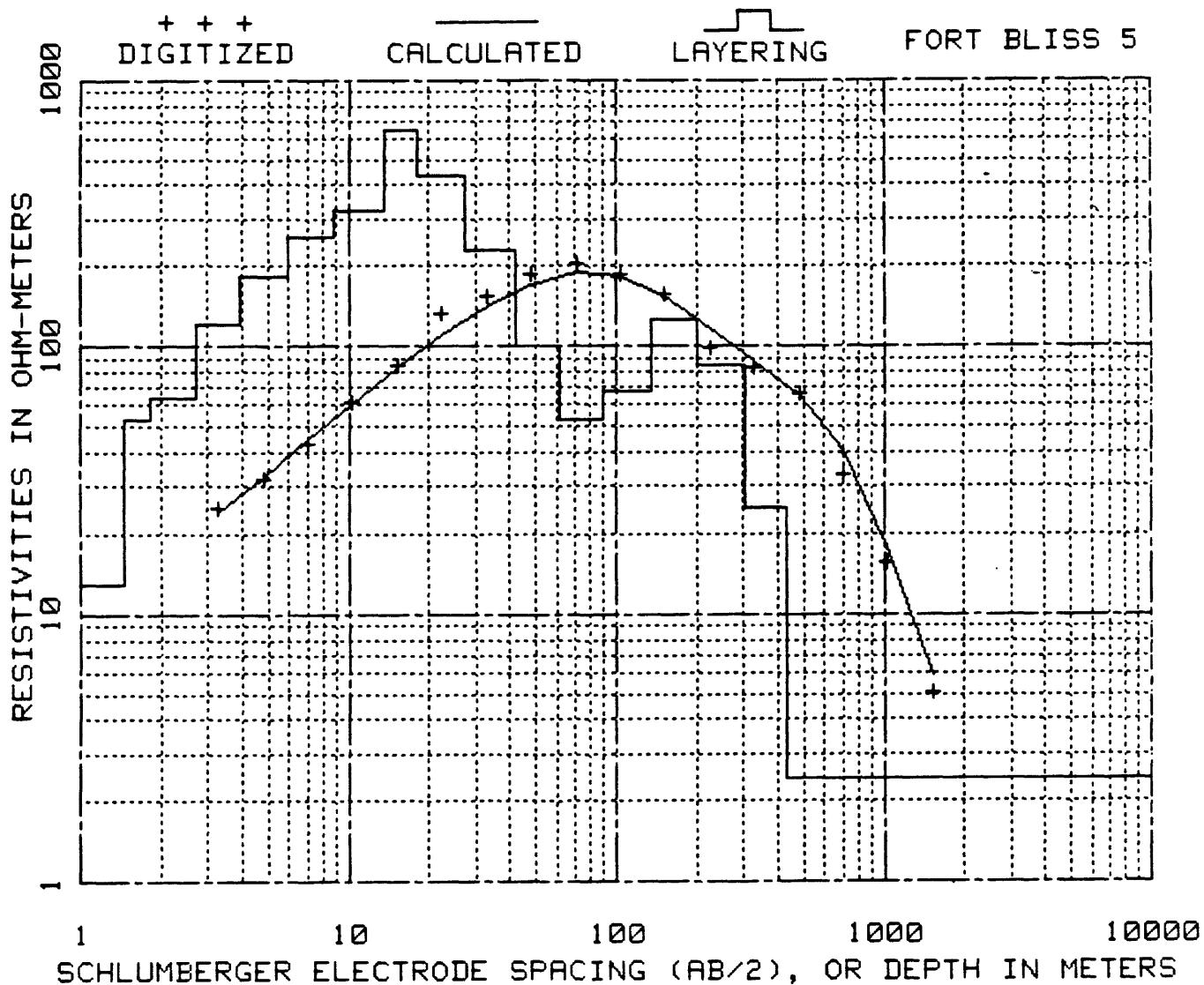


AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
3.05	52.50	121.92	140.00
4.27	52.50	91.44	135.00
6.10	56.00	121.92	155.00
9.14	69.00	182.88	112.00
9.14	68.00	243.84	87.00
12.19	83.50	304.80	56.00
18.29	104.00	426.72	45.00
24.38	119.00	304.80	72.00
30.48	123.00	426.72	57.00
30.48	120.00	609.60	29.00
42.67	134.00	914.40	7.00
60.96	137.00	1219.20	18.00
91.44	118.00	1828.80	13.00



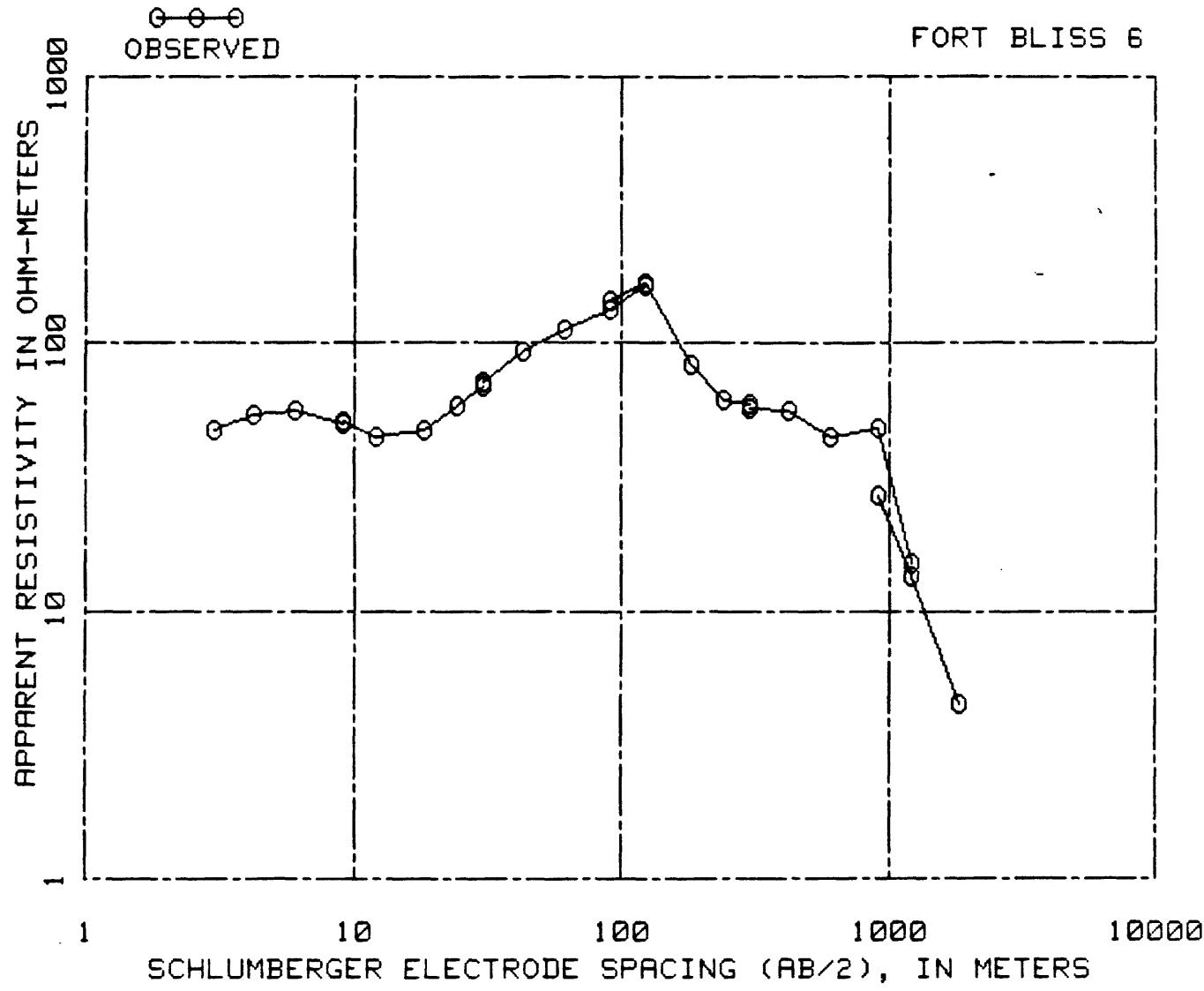
INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.30	65.71	17.21	218.44
.43	65.59	26.43	200.95
.64	65.92	40.05	208.38
.93	66.64	59.80	239.14
1.37	66.10	89.58	203.11
2.01	60.61	130.44	98.21
2.95	54.28	181.82	42.12
4.33	67.71	262.15	32.00
5.97	139.11	391.89	32.25
7.84	264.23	575.46	21.15
11.27	249.33	845.92	15.75
		1000844.92	9.24

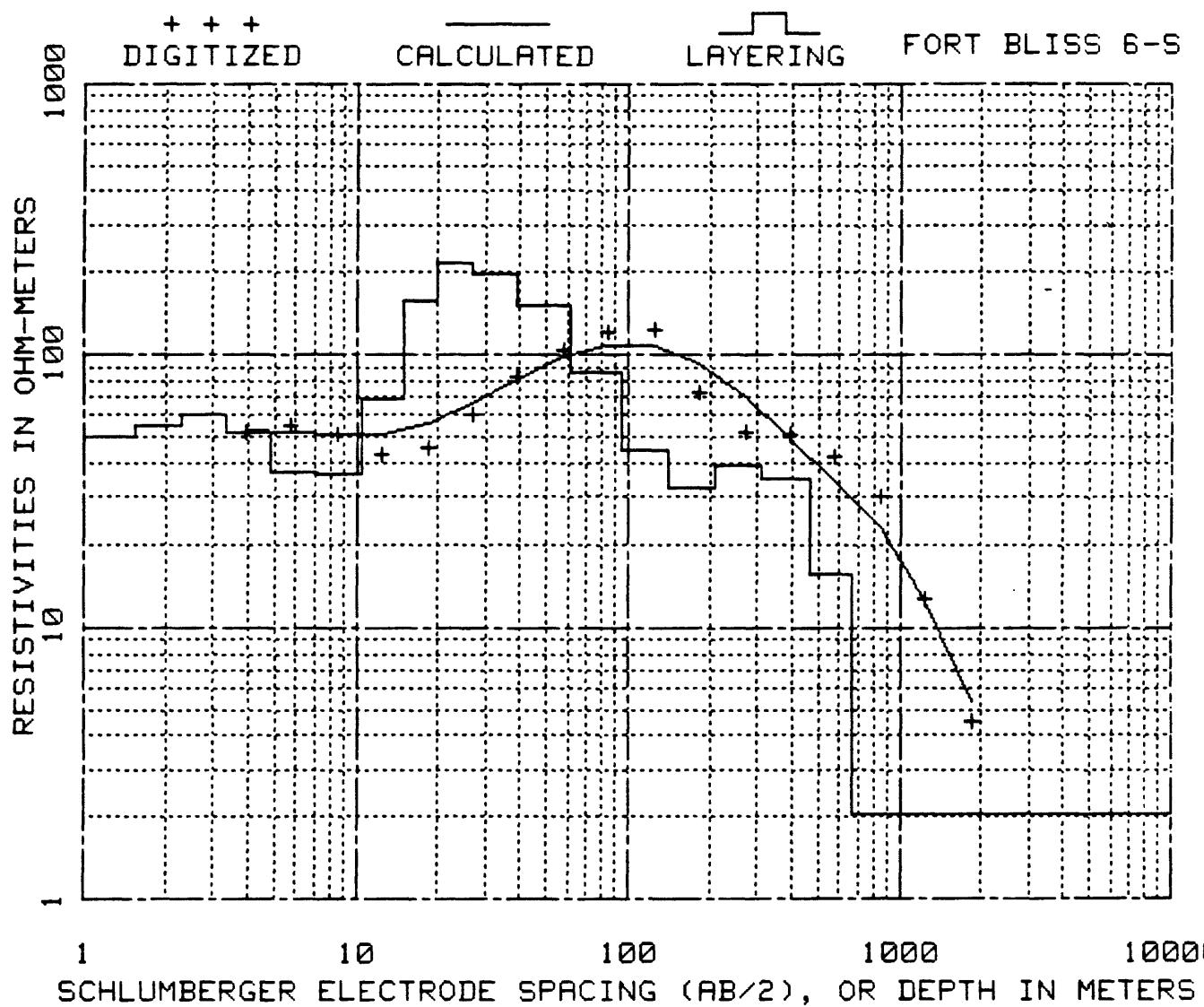




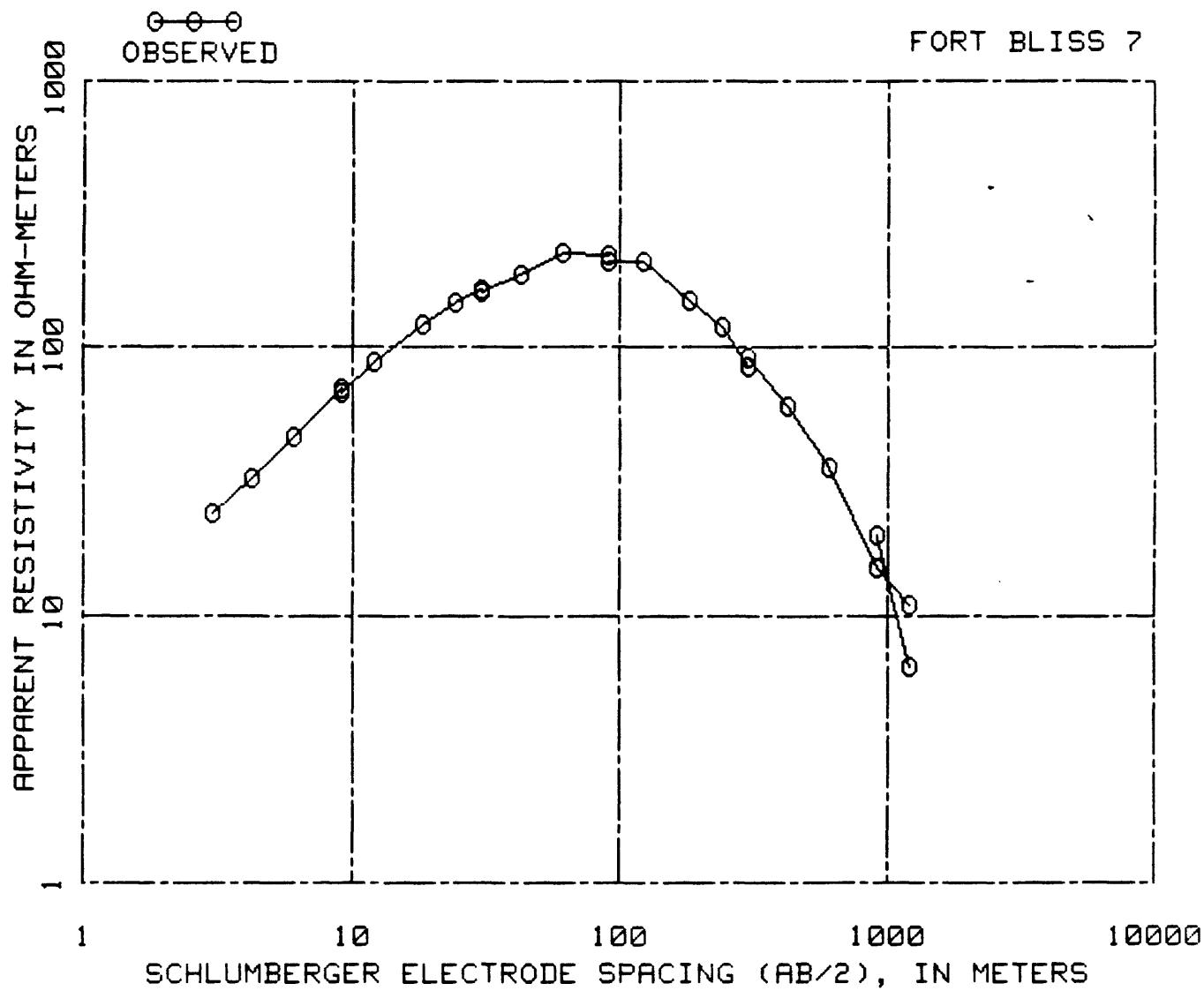
INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
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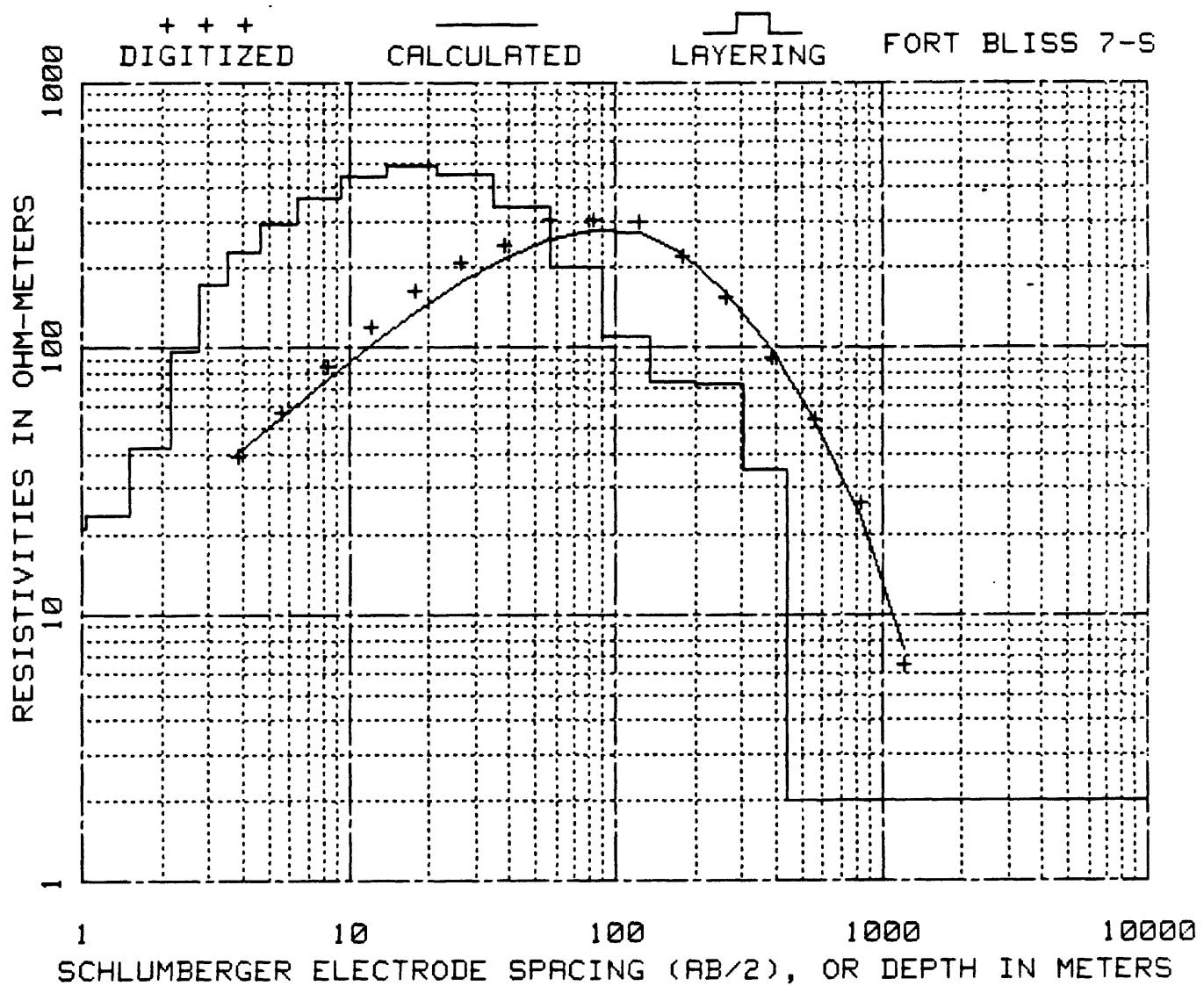
.15	14.92	8.88	259.39
.21	13.18	13.76	320.96
.31	17.86	18.14	651.88
.45	21.38	27.41	435.37
.67	15.93	41.99	231.58
.98	10.02	61.84	100.43
1.44	12.90	89.83	52.70
1.82	53.46	135.34	67.43
2.72	64.07	201.48	125.33
3.96	121.57	301.19	85.52
5.91	181.68	429.31	25.18
		1000428.31	2.41



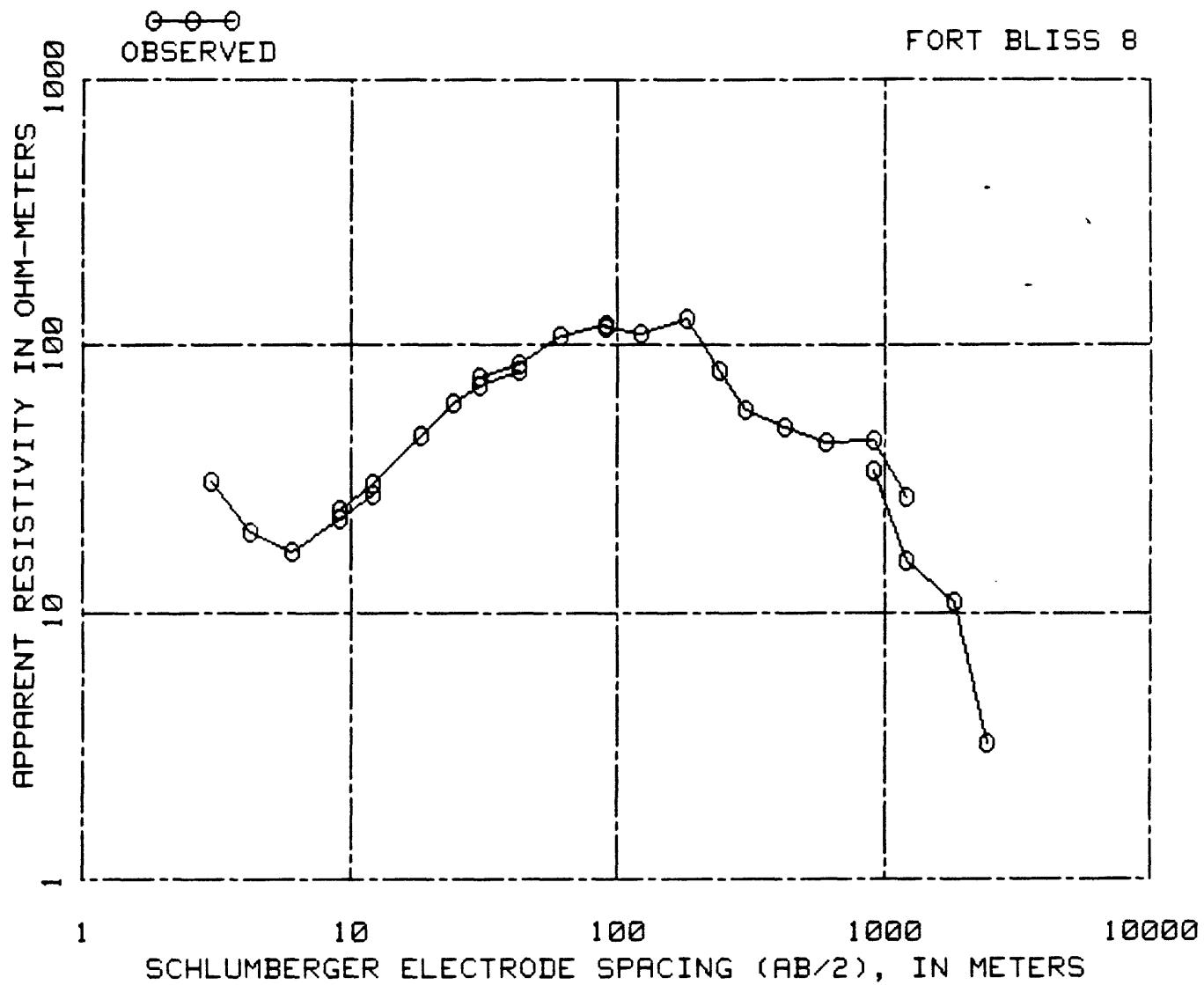


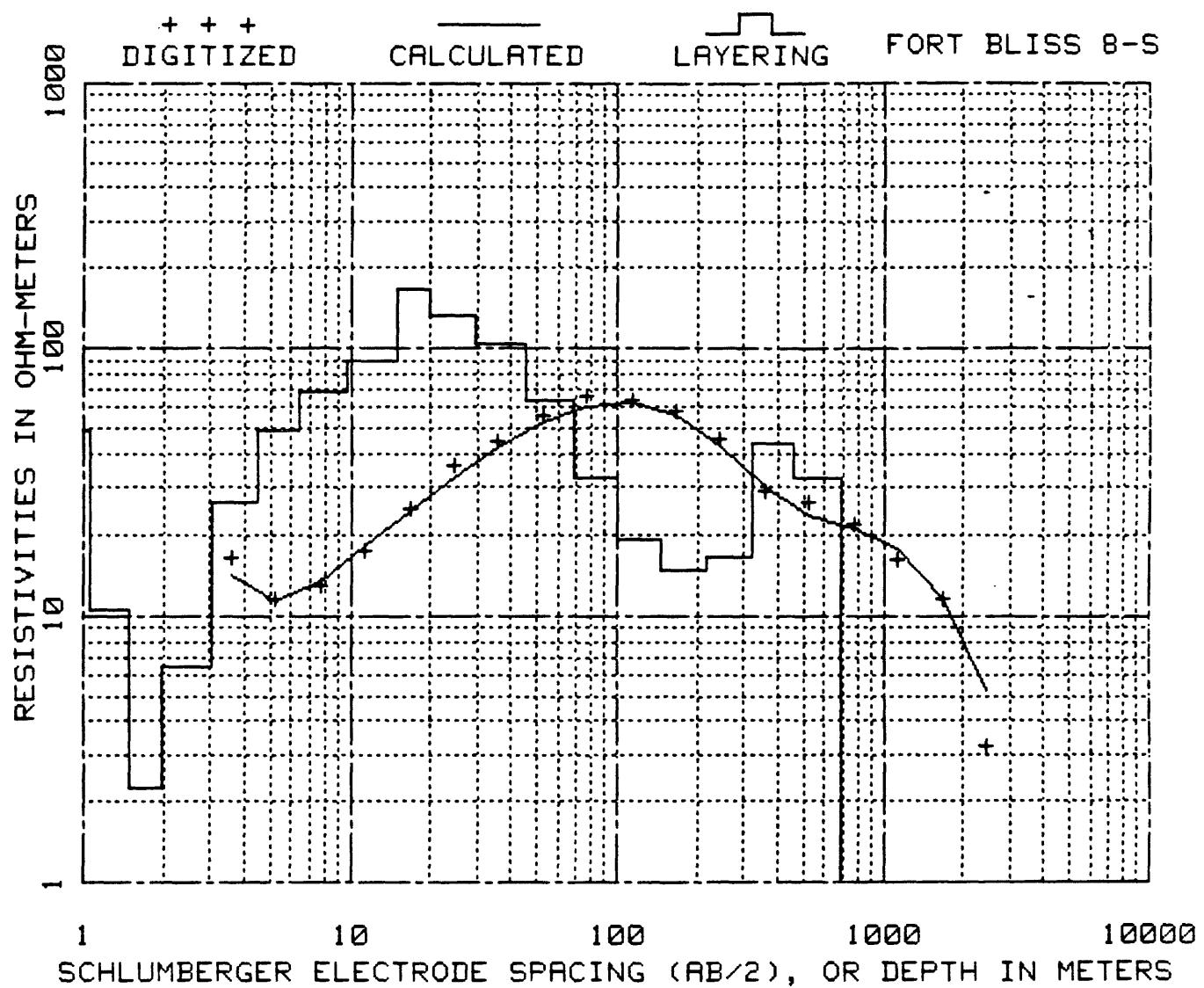
INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.23	51.85	15.07	69.06
.33	52.15	19.81	157.59
.49	52.09	26.66	215.83
.72	51.41	39.32	198.63
1.06	50.24	61.58	150.76
1.55	50.48	94.73	86.85
2.27	55.09	139.88	44.78
3.33	60.49	206.21	32.27
4.89	52.19	310.91	39.14
7.14	36.89	464.89	35.33
10.48	36.74	668.09	15.64
		1000667.09	2.04



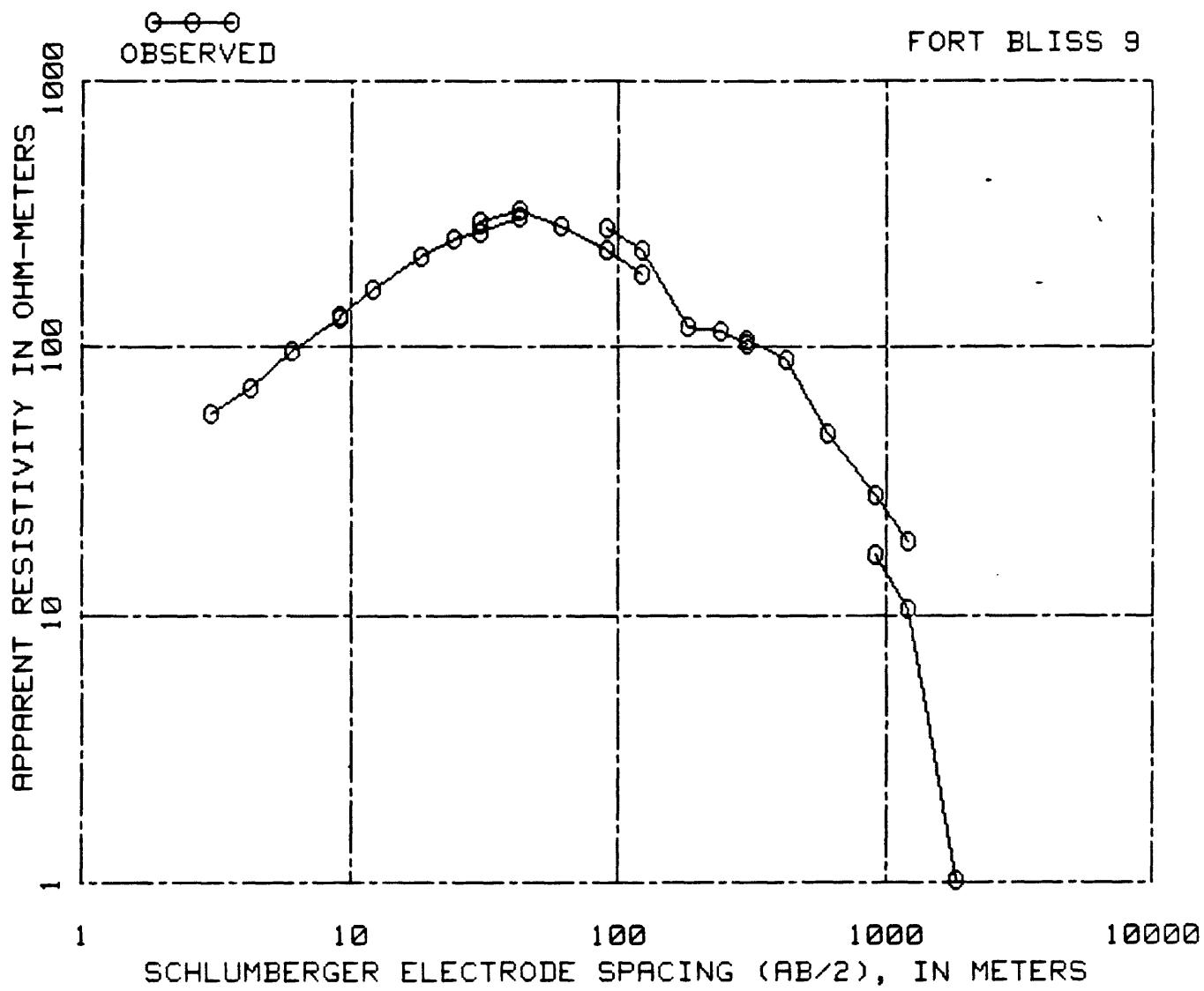


INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.22	23.95	9.30	370.06
.33	25.33	13.86	447.00
.48	25.70	21.54	486.13
.70	23.80	34.93	450.96
1.03	20.98	57.15	341.78
1.51	23.60	89.60	202.01
2.15	41.97	135.11	109.96
2.78	96.86	201.41	74.39
3.52	174.74	302.62	72.82
4.66	231.85	441.60	34.92
6.46	295.27	1000440.60	2.02





INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.16	35.57	14.87	89.28
.23	41.50	19.74	167.70
.34	29.15	29.31	133.57
.50	26.63	45.10	105.02
.73	43.96	68.32	64.55
1.06	49.46	100.27	32.78
1.49	10.61	145.54	19.11
1.96	2.25	214.24	14.90
3.04	6.45	321.01	16.44
4.48	26.60	457.78	44.23
6.47	49.49	690.48	32.24
9.73	69.44	1000689.48	1.00

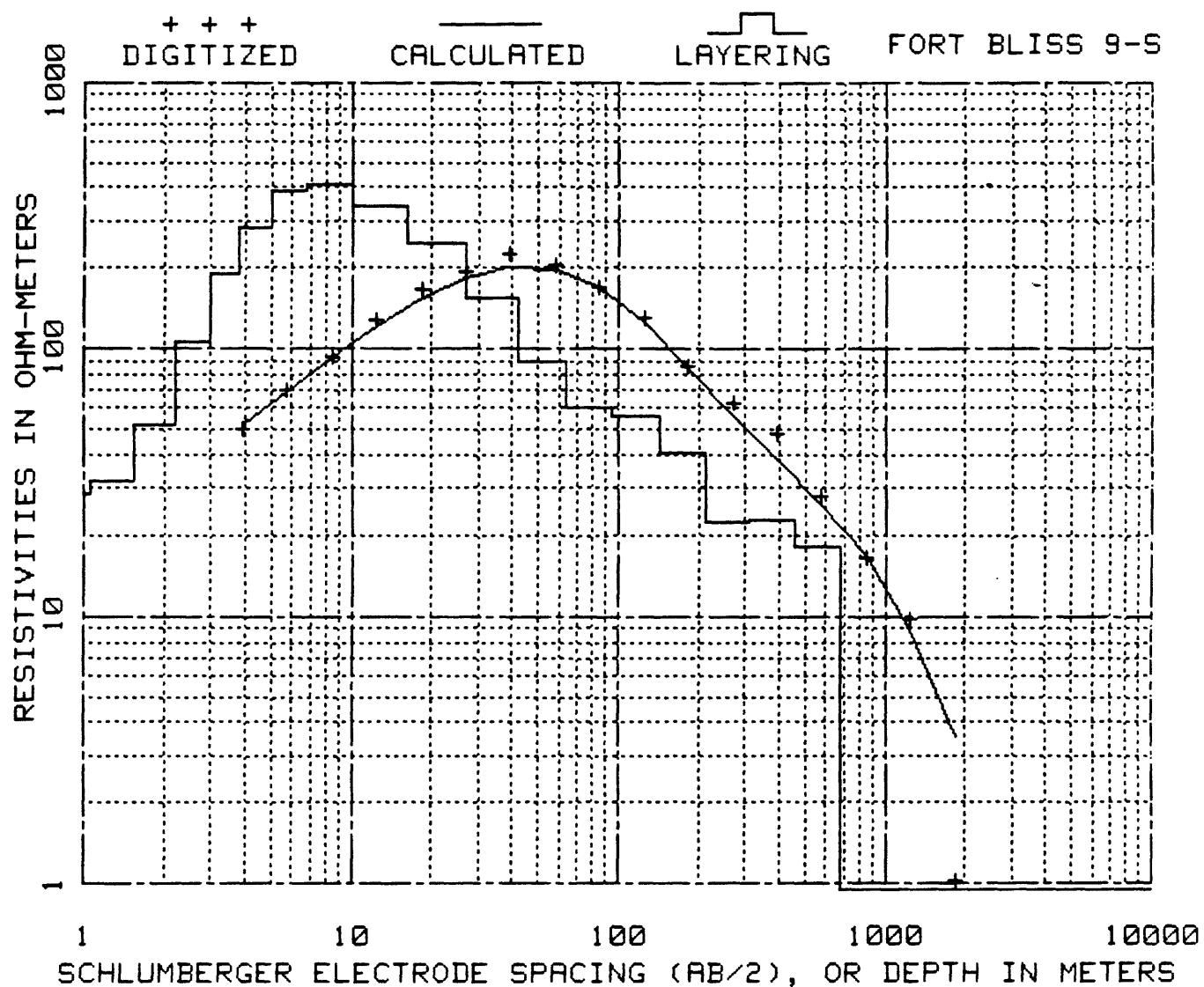


AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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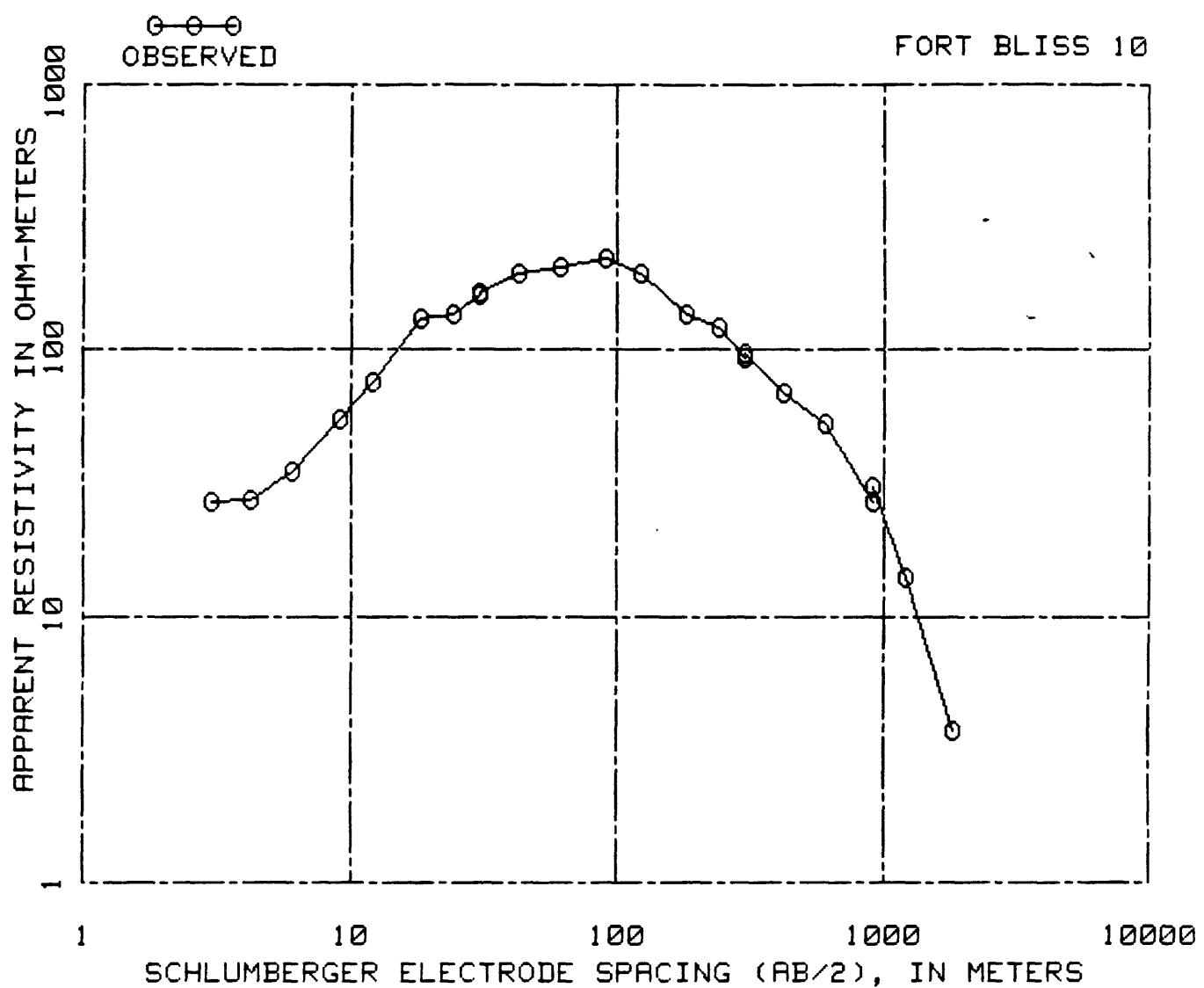
3.05	56.00
4.27	70.00
6.10	96.00
9.14	129.00
9.14	130.00
12.19	165.00
18.29	218.00
24.38	253.00
30.48	265.00
42.67	302.00
30.48	293.00
42.67	323.00
60.96	280.00
91.44	230.00

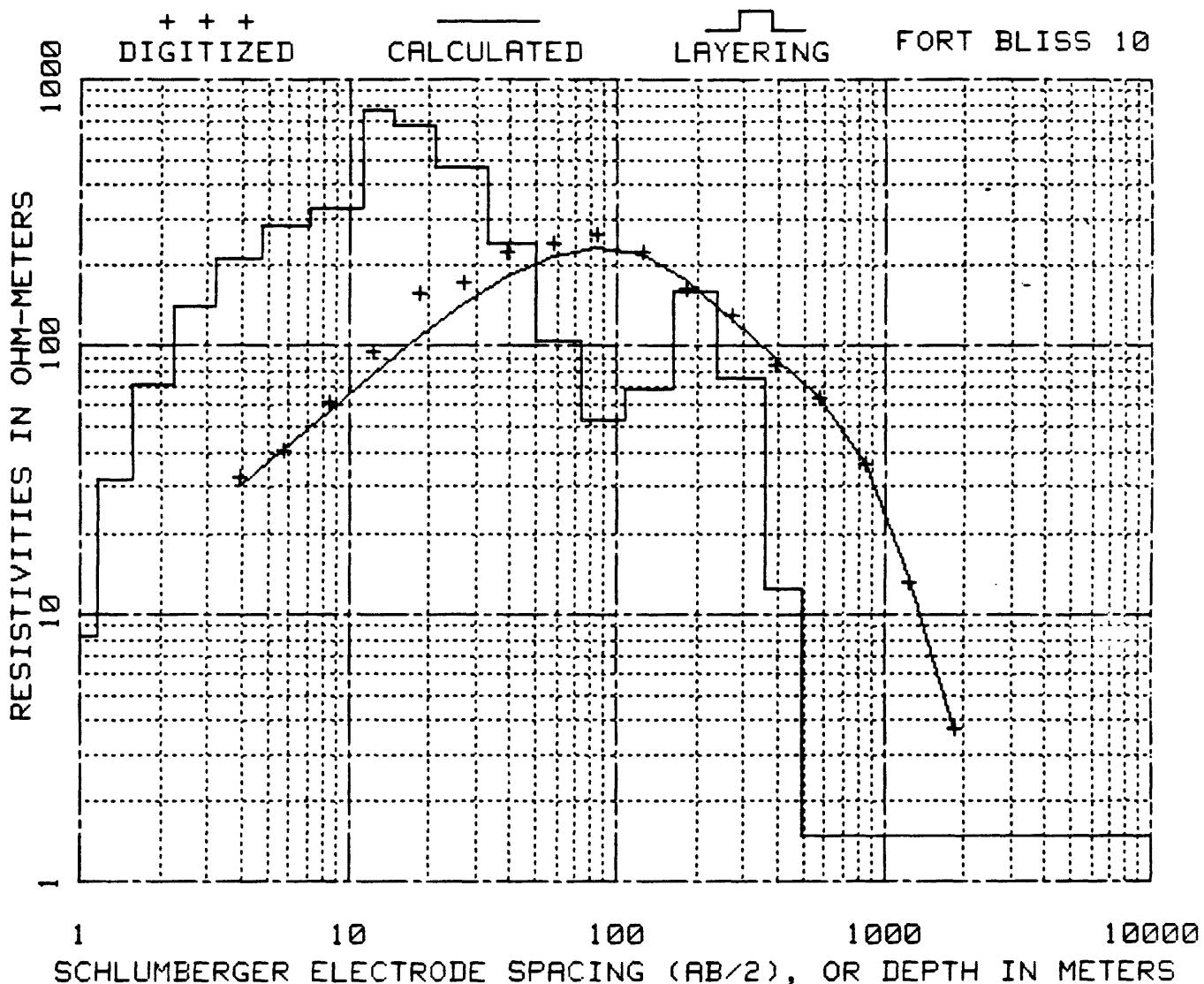
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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121.92	188.00
91.44	275.00
121.92	230.00
182.88	120.00
243.84	115.00
304.80	102.00
304.80	107.00
426.72	90.00
609.60	47.00
914.40	28.00
1219.20	19.00
914.40	17.00
1219.20	10.50
1828.80	1.03



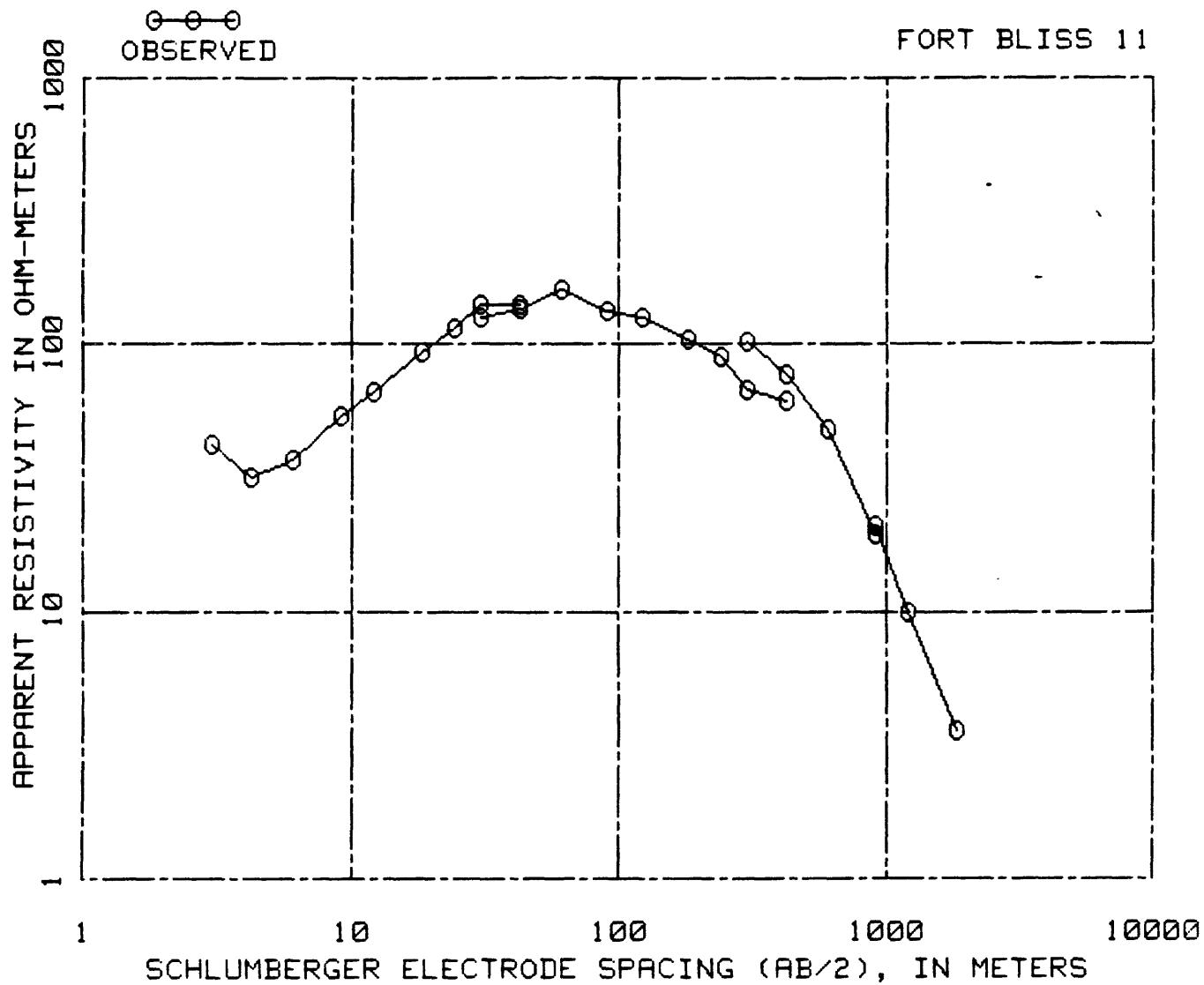
INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.23	33.45	10.00	407.97
.33	35.11	16.22	339.75
.49	34.79	26.76	247.17
.72	31.84	42.17	154.05
1.05	28.48	63.81	90.18
1.55	31.67	95.09	60.67
2.21	52.18	142.64	56.29
2.95	106.82	211.67	41.12
3.82	190.33	307.65	22.45
5.01	285.00	457.87	22.75
6.78	391.04	678.65	18.27
		1000677.65	.95





INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
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.17	15.88	11.25	331.23
.26	14.40	14.58	771.21
.37	23.09	21.11	668.28
.54	24.93	32.89	469.07
.79	11.42	50.23	243.37
1.16	8.26	73.98	104.93
1.58	31.78	107.69	52.58
2.26	72.26	162.48	69.51
3.22	140.58	237.06	161.95
4.74	213.38	355.93	76.38
7.17	281.18	492.15	12.46
		1000491.15	1.48

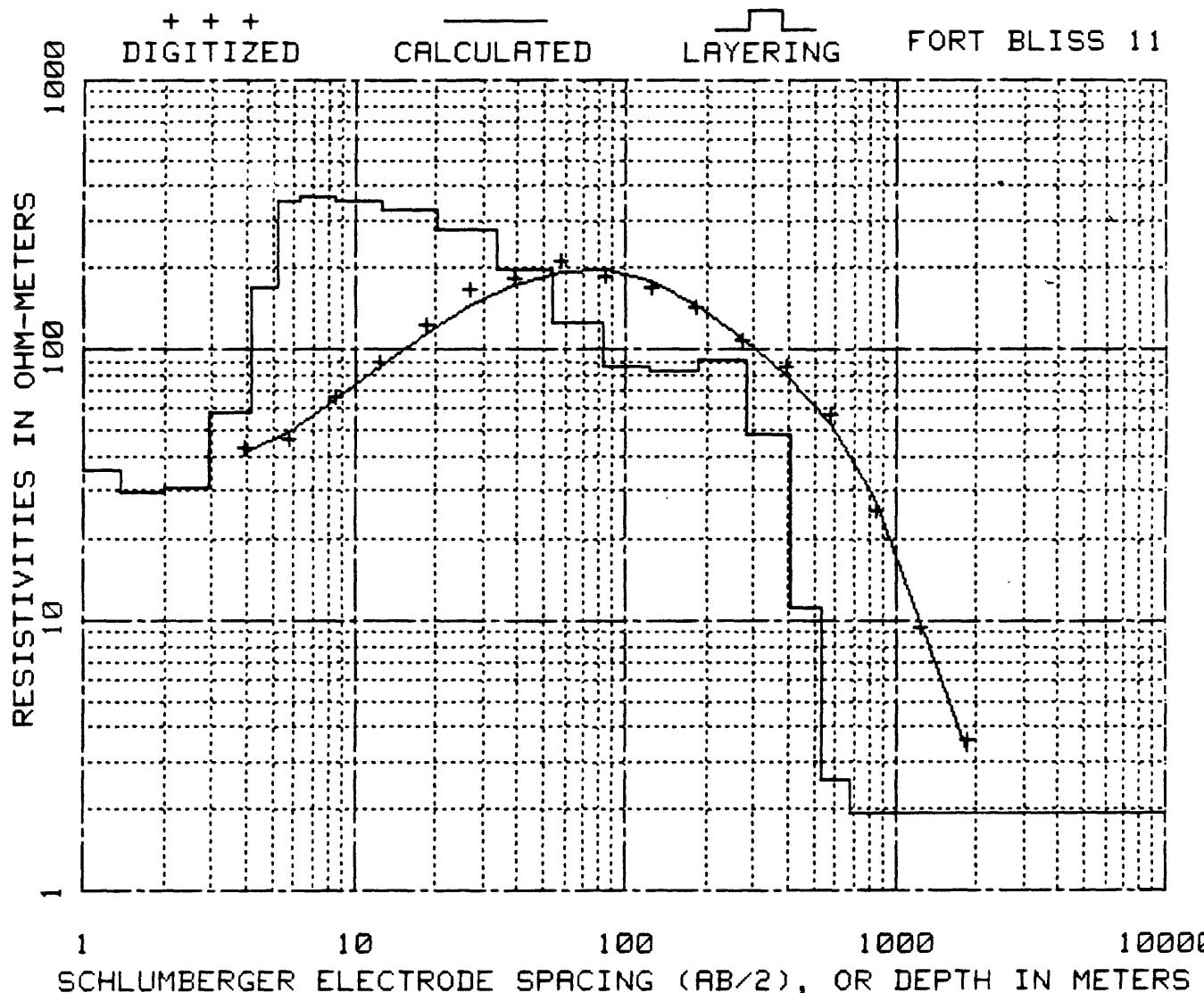


AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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3.05	42.00
4.27	32.00
6.10	37.40
9.14	54.00
12.19	67.00
18.29	94.00
24.38	114.00
30.48	142.00
42.67	140.00
30.48	125.00
42.67	135.00
60.96	160.00

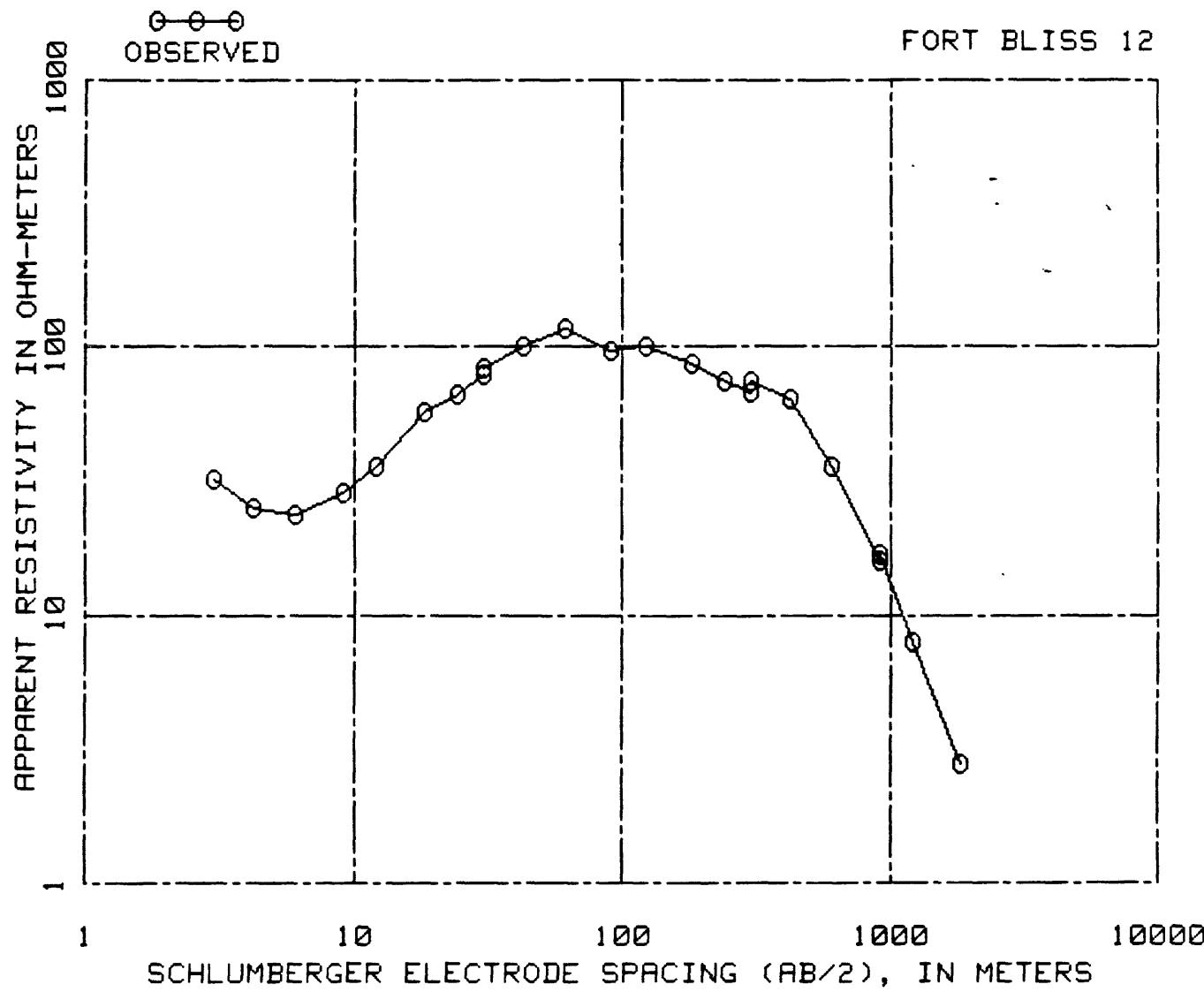
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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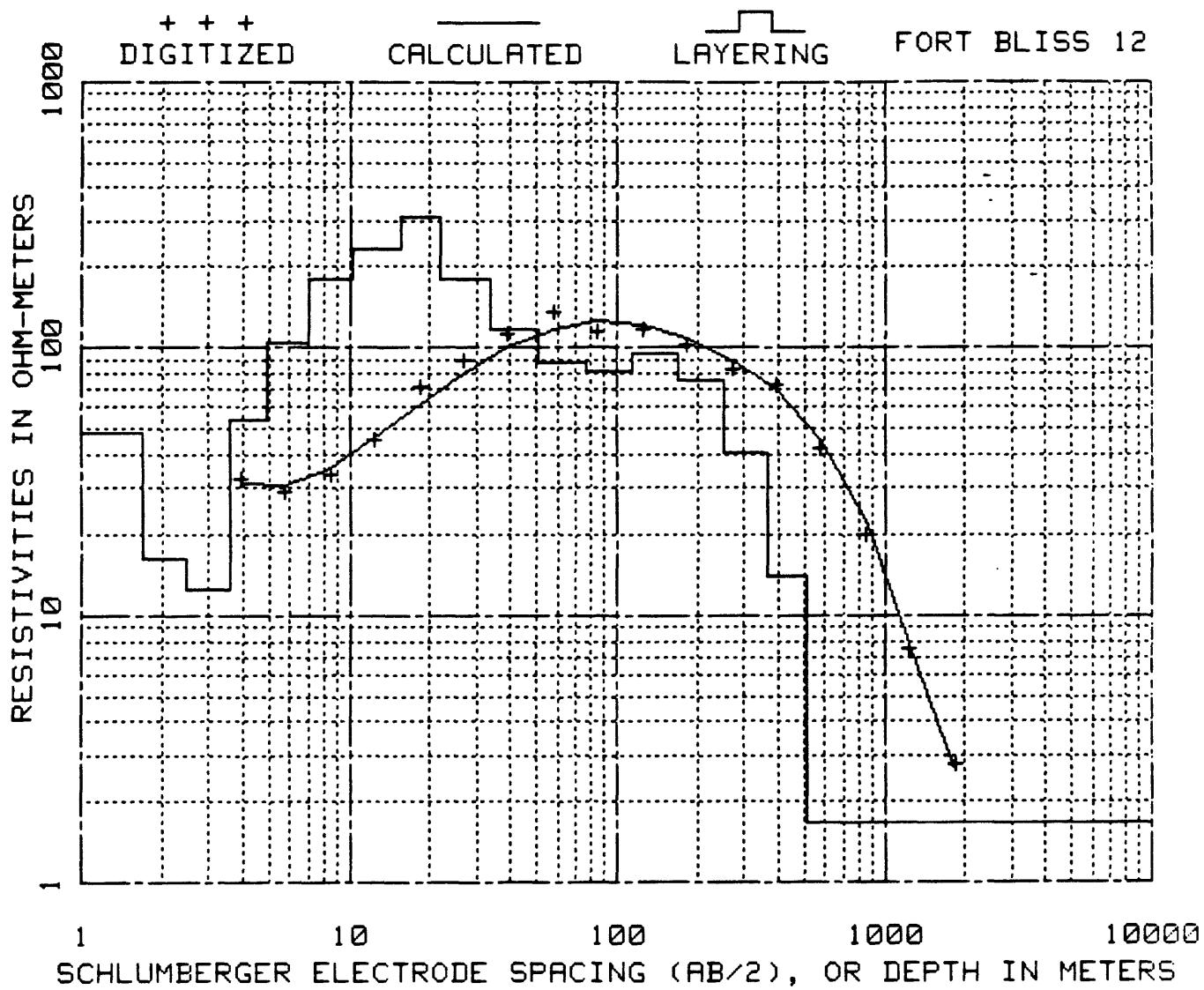
91.44	134.00
121.92	127.00
182.88	105.00
243.84	90.00
304.80	68.00
426.72	62.00
304.80	103.00
426.72	77.30
609.60	48.00
914.40	19.50
914.40	21.20
1219.20	9.90
1828.80	3.60



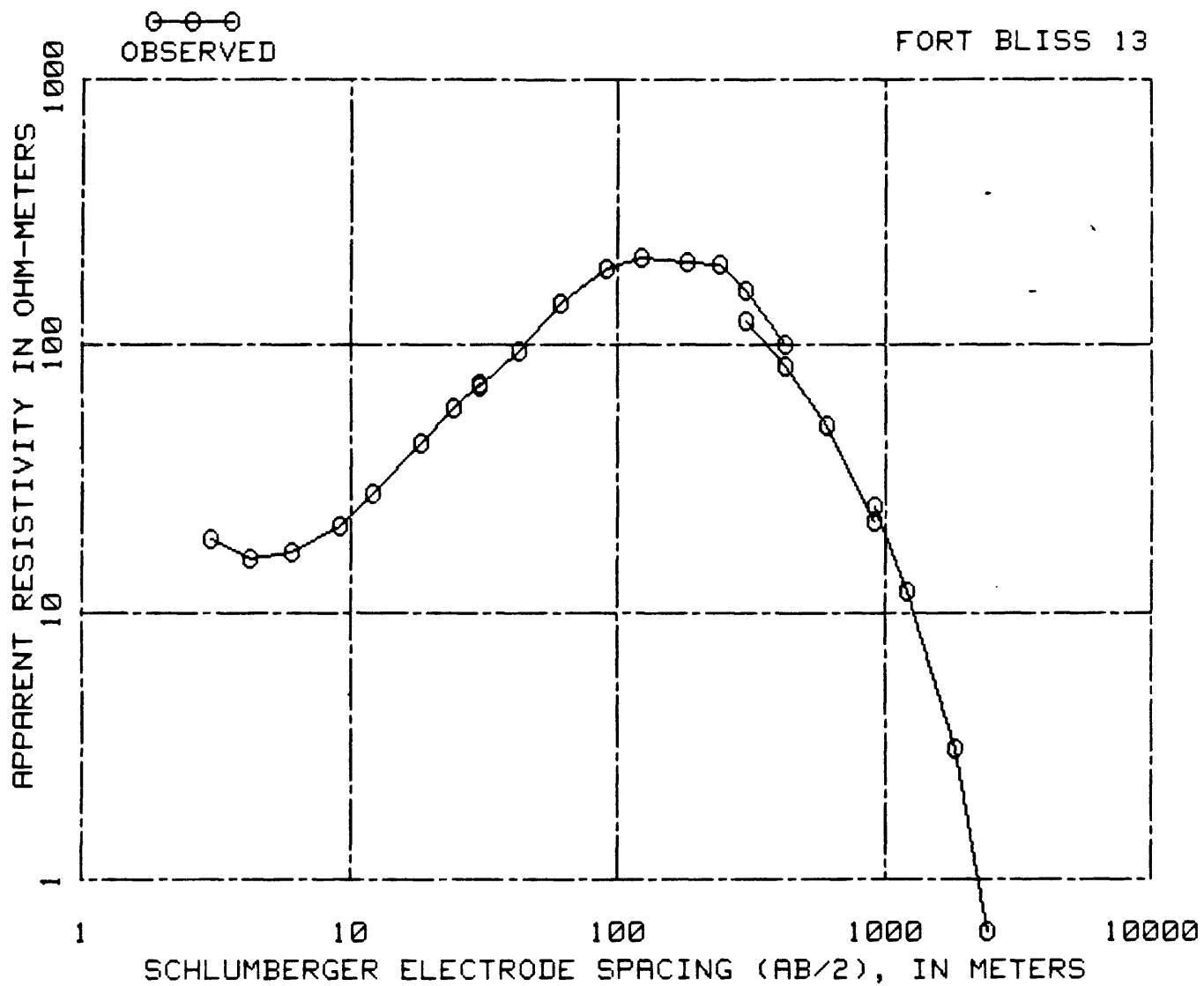
INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
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.30	40.94	12.66	351.23
.43	41.38	20.30	328.03
.64	41.51	33.42	275.36
.93	40.32	53.70	196.36
1.37	35.80	82.49	125.45
2.00	29.59	123.44	86.33
2.94	30.74	185.55	83.44
4.20	58.05	279.06	91.18
5.26	169.66	406.06	47.98
6.35	355.19	531.32	11.24
8.49	364.83	675.35	2.59
	1000674.35		1.94





INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.17	33.30	10.29	181.10
.25	43.67	15.50	234.81
.37	41.65	21.69	312.19
.55	29.00	33.64	180.38
.81	27.17	51.09	117.74
1.16	48.43	76.41	88.06
1.71	48.27	113.86	80.95
2.48	16.27	169.50	94.19
3.61	12.48	250.73	75.87
4.91	54.02	364.57	48.67
7.10	104.13	510.92	13.96
		1000509.92	1.66

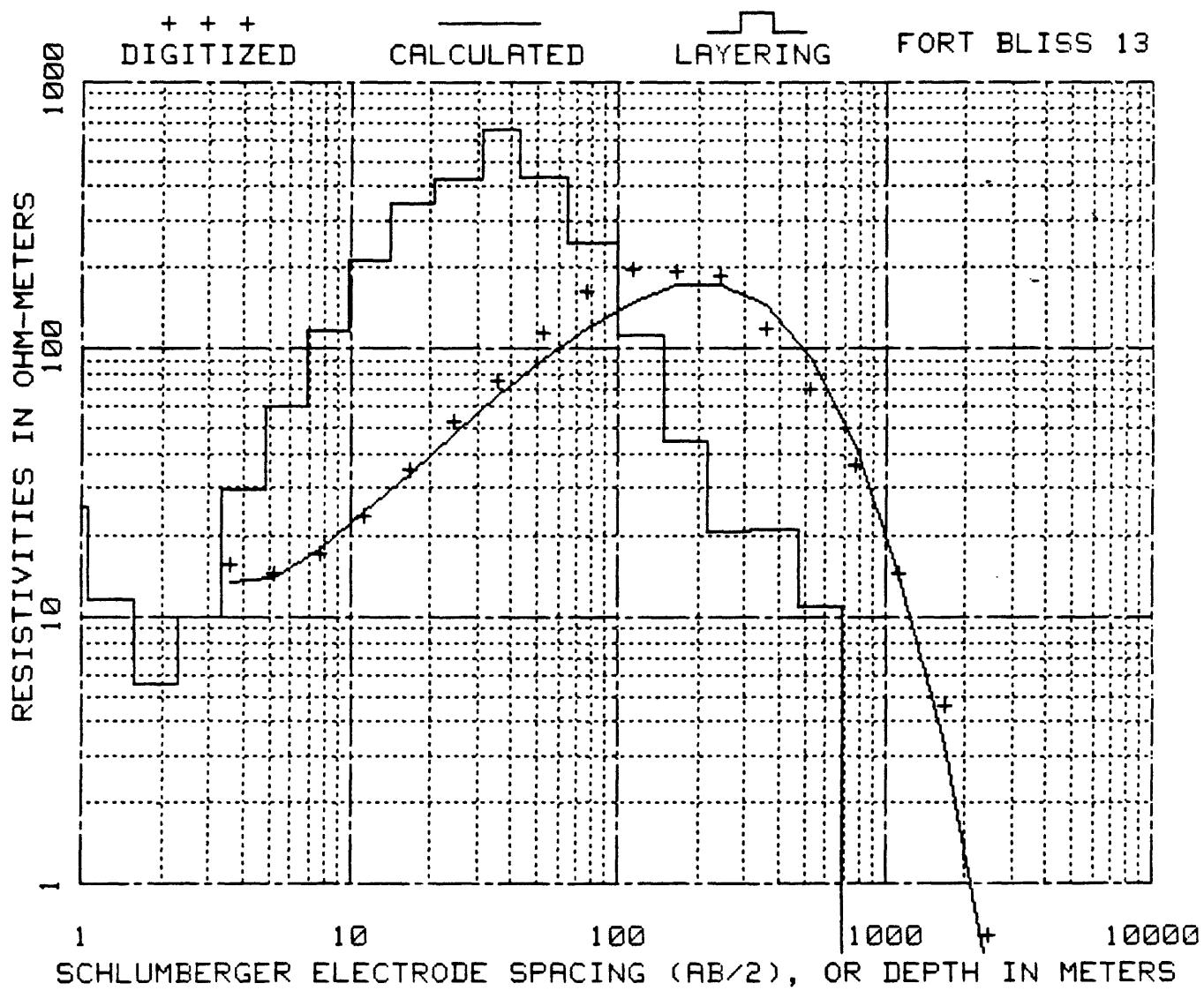


AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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3.05	19.00
4.27	15.80
6.10	16.70
9.14	21.30
12.19	28.00
18.29	43.00
24.38	58.00
30.48	72.00
30.48	70.00
42.67	95.00
60.96	144.00
91.44	194.00

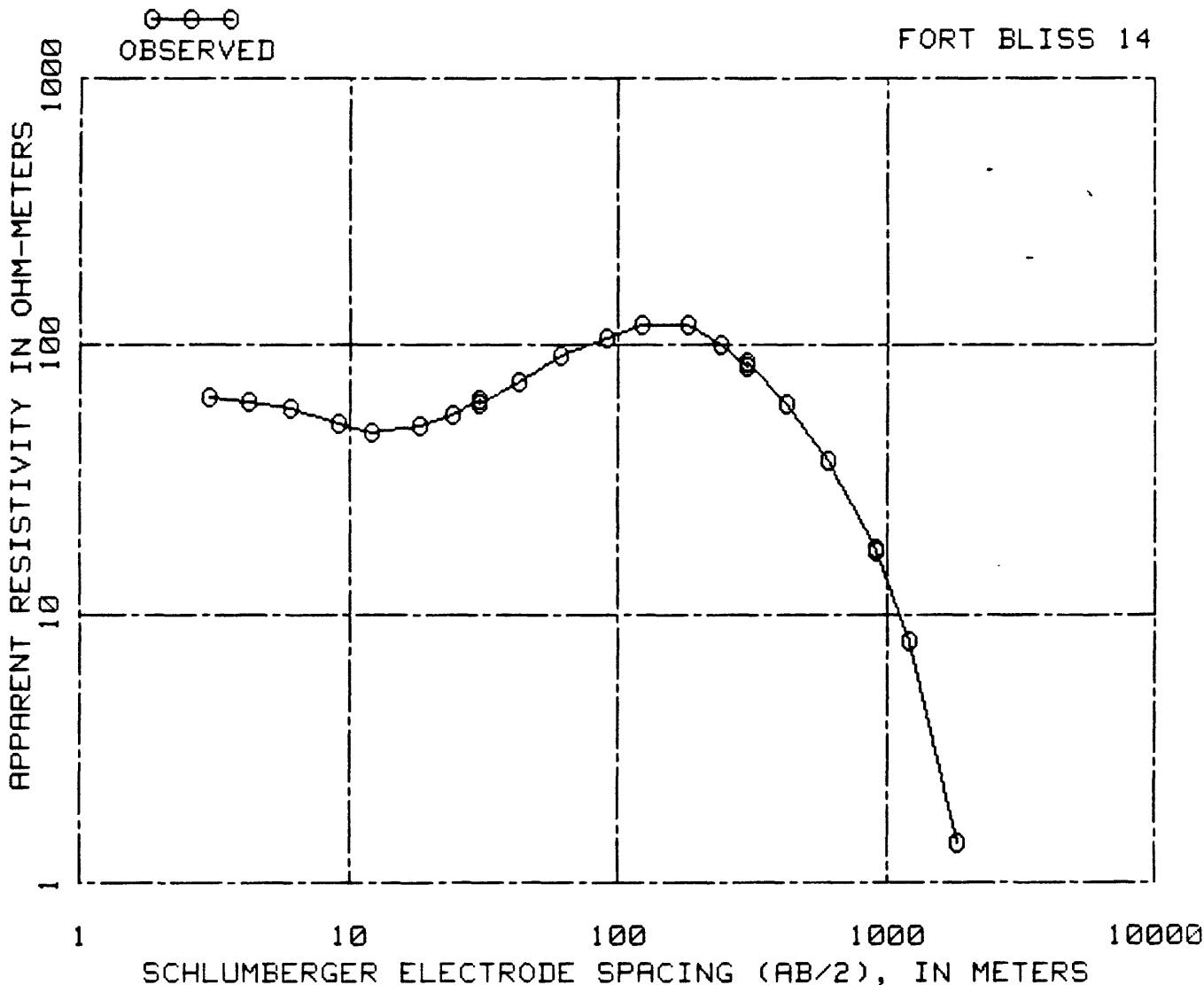
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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121.92	215.00
182.88	204.00
243.84	200.00
304.80	160.00
426.72	100.00
304.80	123.00
426.72	83.00
609.60	50.00
914.40	22.00
914.40	24.80
1219.20	12.00
1828.80	3.10
2438.40	.64



INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
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.16	16.05	14.20	213.74
.23	21.45	20.58	349.01
.34	16.77	31.27	423.31
.50	12.76	42.71	662.69
.73	16.83	65.37	436.33
1.05	25.63	99.70	246.50
1.56	11.68	148.46	113.22
2.27	5.58	216.82	44.72
3.36	10.02	316.45	20.74
4.86	29.39	472.33	21.06
6.96	60.17	695.85	10.84
9.89	117.58	1000694.85	.08

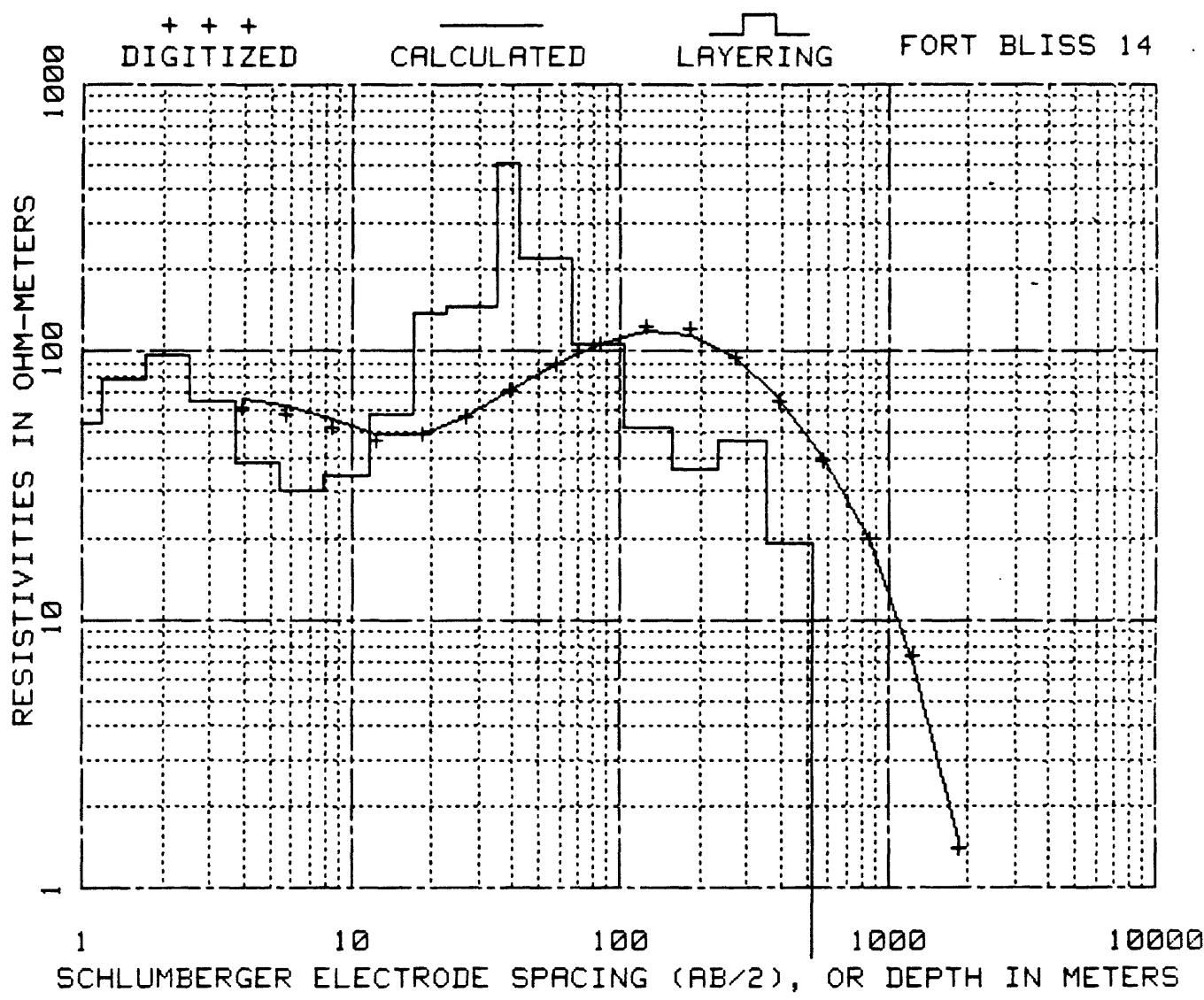


AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
----------------------	--

3.05	64.00
4.27	62.00
6.10	58.00
9.14	51.50
12.19	47.00
18.29	50.00
24.38	55.00
30.48	63.00
30.48	61.00
42.67	73.00
60.96	91.00

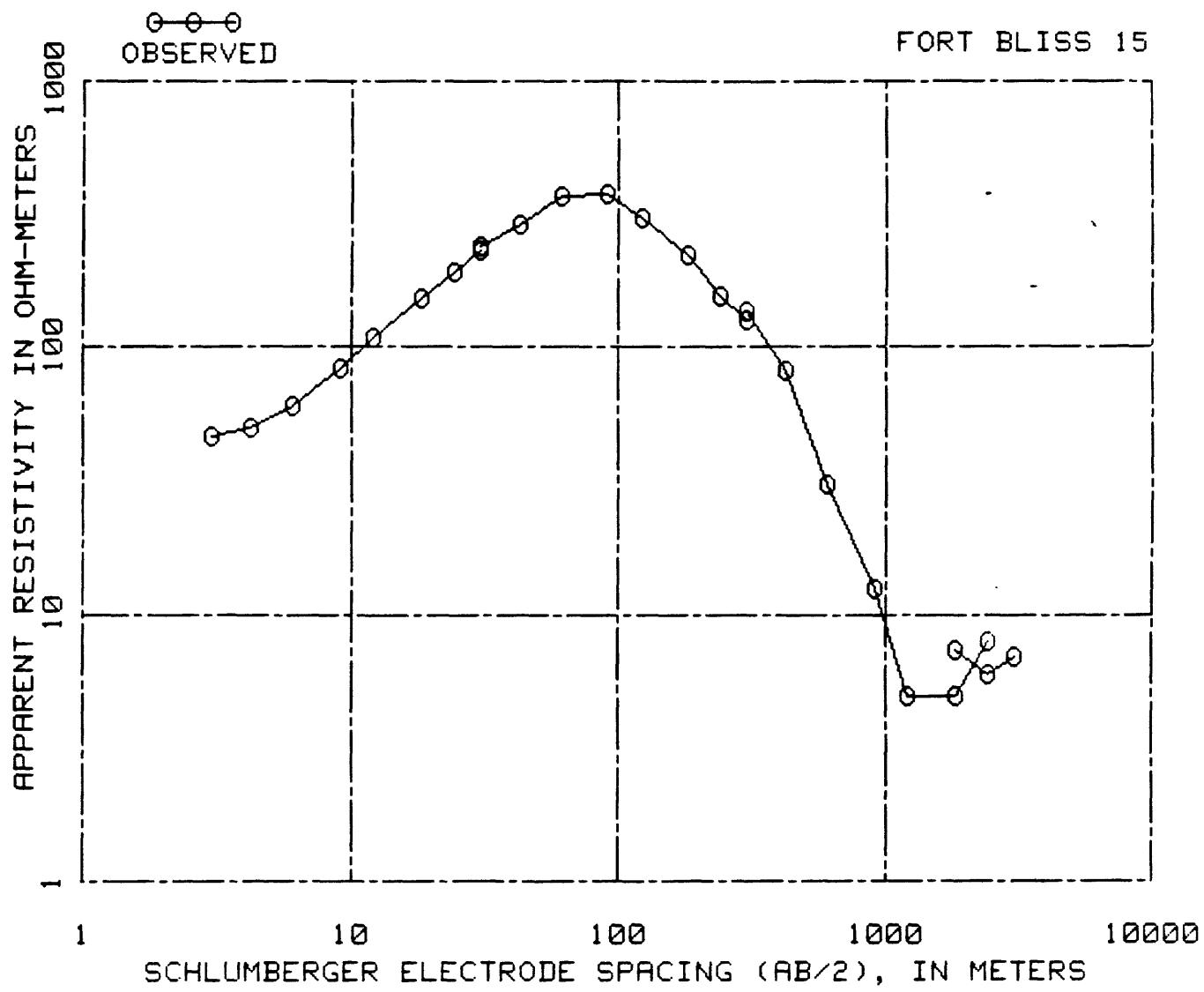
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
----------------------	--

91.44	107.00
121.92	120.00
182.88	120.00
243.84	100.00
304.80	83.00
304.80	86.00
426.72	60.00
609.60	37.00
914.40	17.50
914.40	17.20
1219.20	8.00
1828.80	1.42

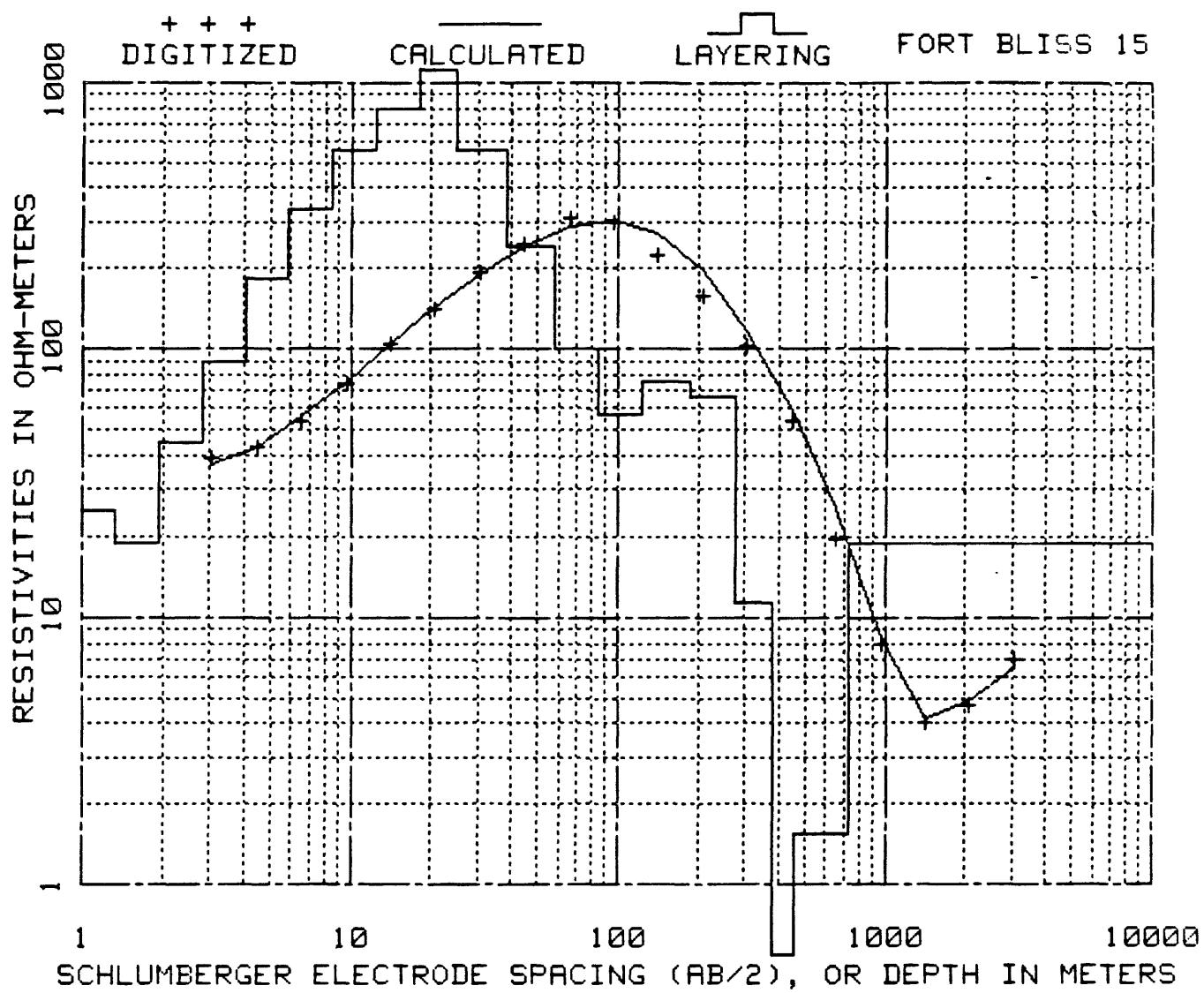


INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
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.17	58.77	11.74	34.72
.26	62.53	17.09	57.94
.37	74.21	22.56	139.41
.55	72.42	34.92	146.95
.81	56.30	42.17	505.28
1.19	53.58	65.54	220.13
1.73	77.98	103.26	106.54
2.50	97.56	156.38	51.84
3.70	65.52	234.39	36.10
5.43	38.62	353.85	46.67
7.96	30.23	519.40	19.24
		1000518.40	.39

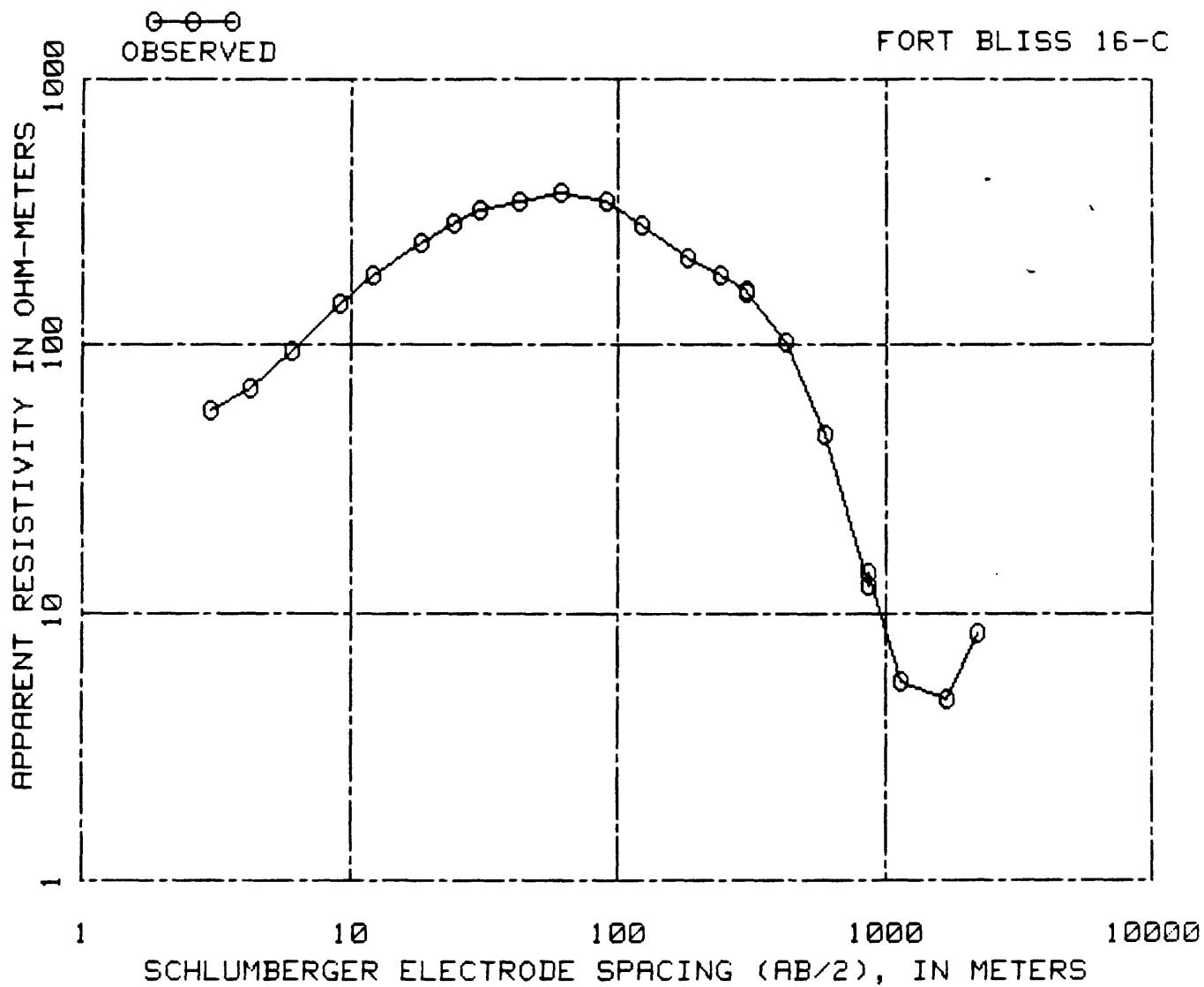


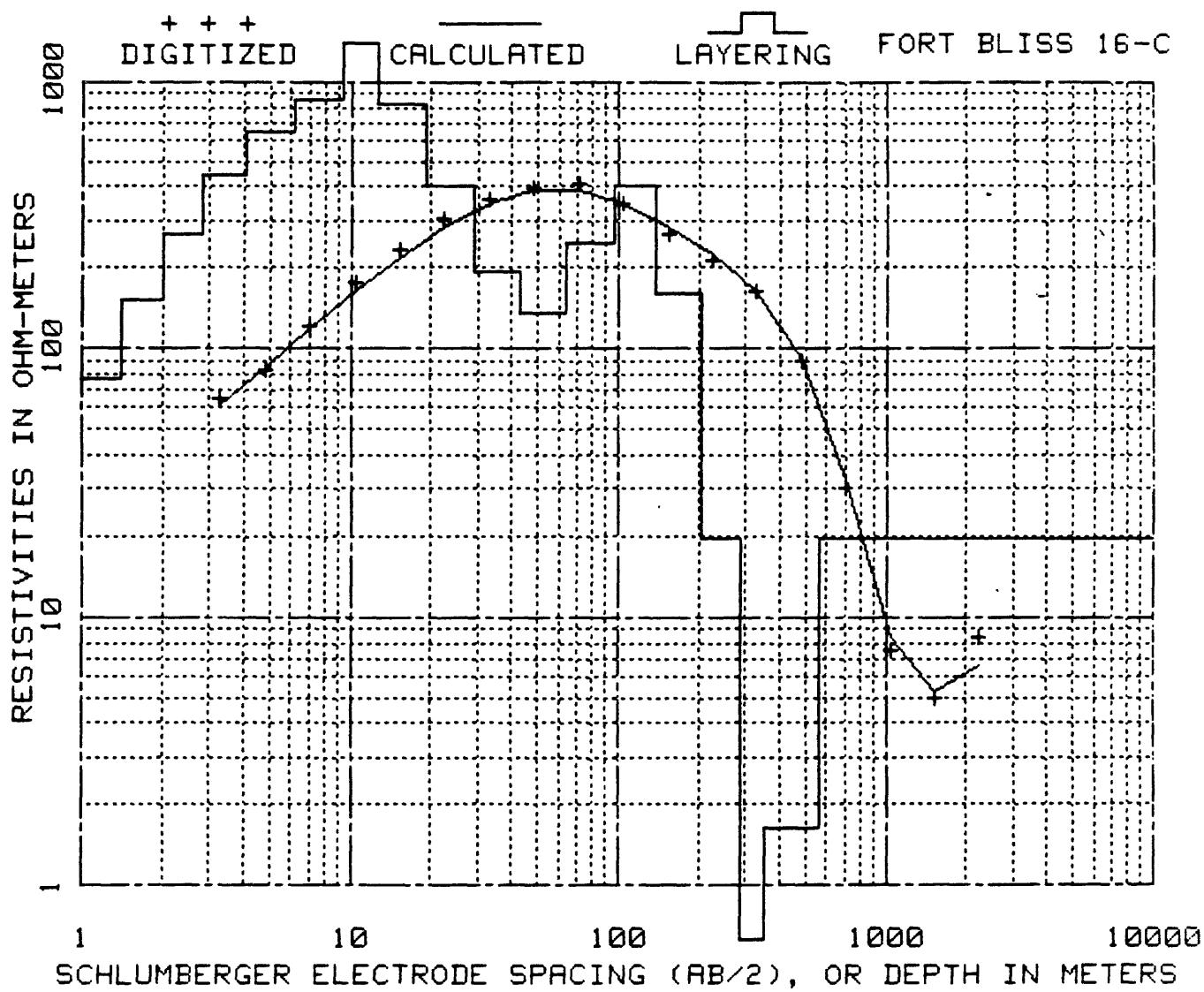
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
3.05	46.30	182.88	222.00
4.27	50.00	243.84	156.00
6.10	61.00	304.80	125.00
9.14	83.50	304.80	137.00
12.19	108.00	426.72	81.00
18.29	151.00	609.60	31.00
24.38	190.00	914.40	12.50
30.48	230.00	1219.20	5.00
30.48	237.00	1828.80	5.00
42.67	290.00	2438.40	8.00
60.96	365.00	1828.80	7.40
91.44	372.00	2438.40	6.00
121.92	302.00	3048.00	7.00



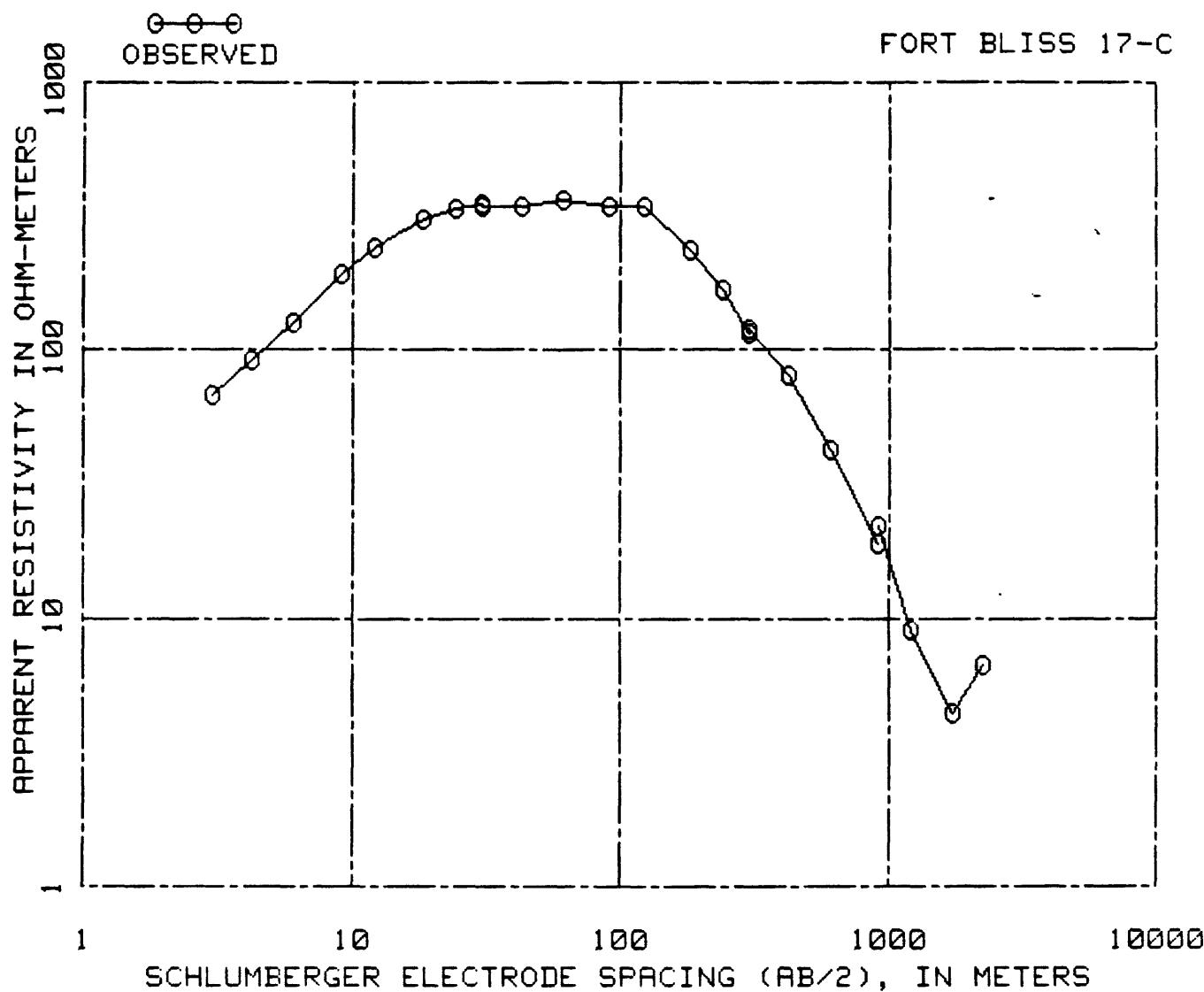
INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
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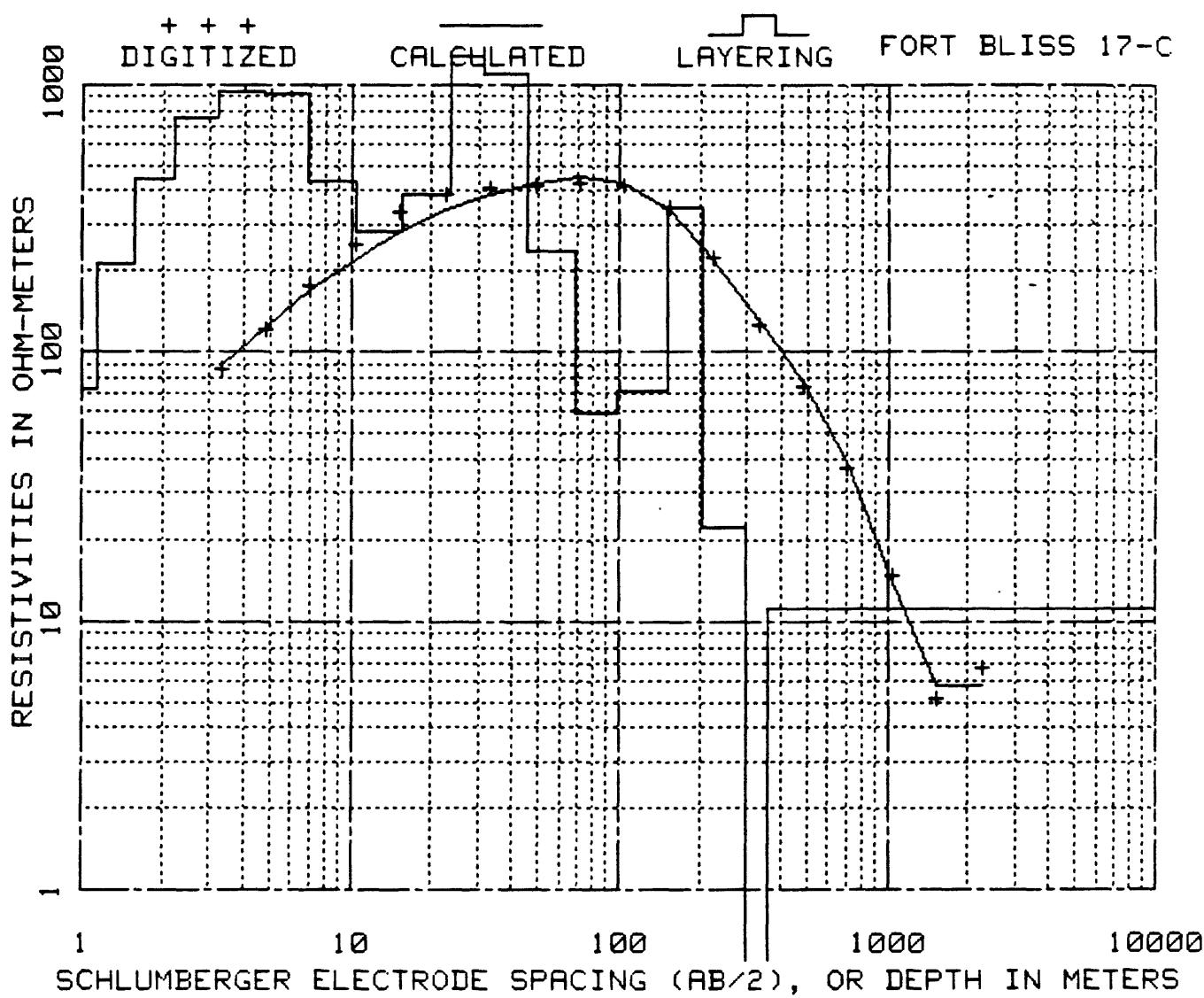
.14	42.01	12.38	555.96
.20	41.51	18.20	797.69
.29	32.57	24.92	1120.75
.43	33.31	38.55	557.94
.62	50.79	57.71	244.21
.91	52.55	83.75	100.42
1.33	25.06	122.16	57.40
1.95	18.97	184.43	76.43
2.81	45.13	276.08	66.86
4.13	89.29	381.55	11.36
5.86	183.78	461.98	.55
8.45	334.18	738.99	1.54
		1000737.99	19.00



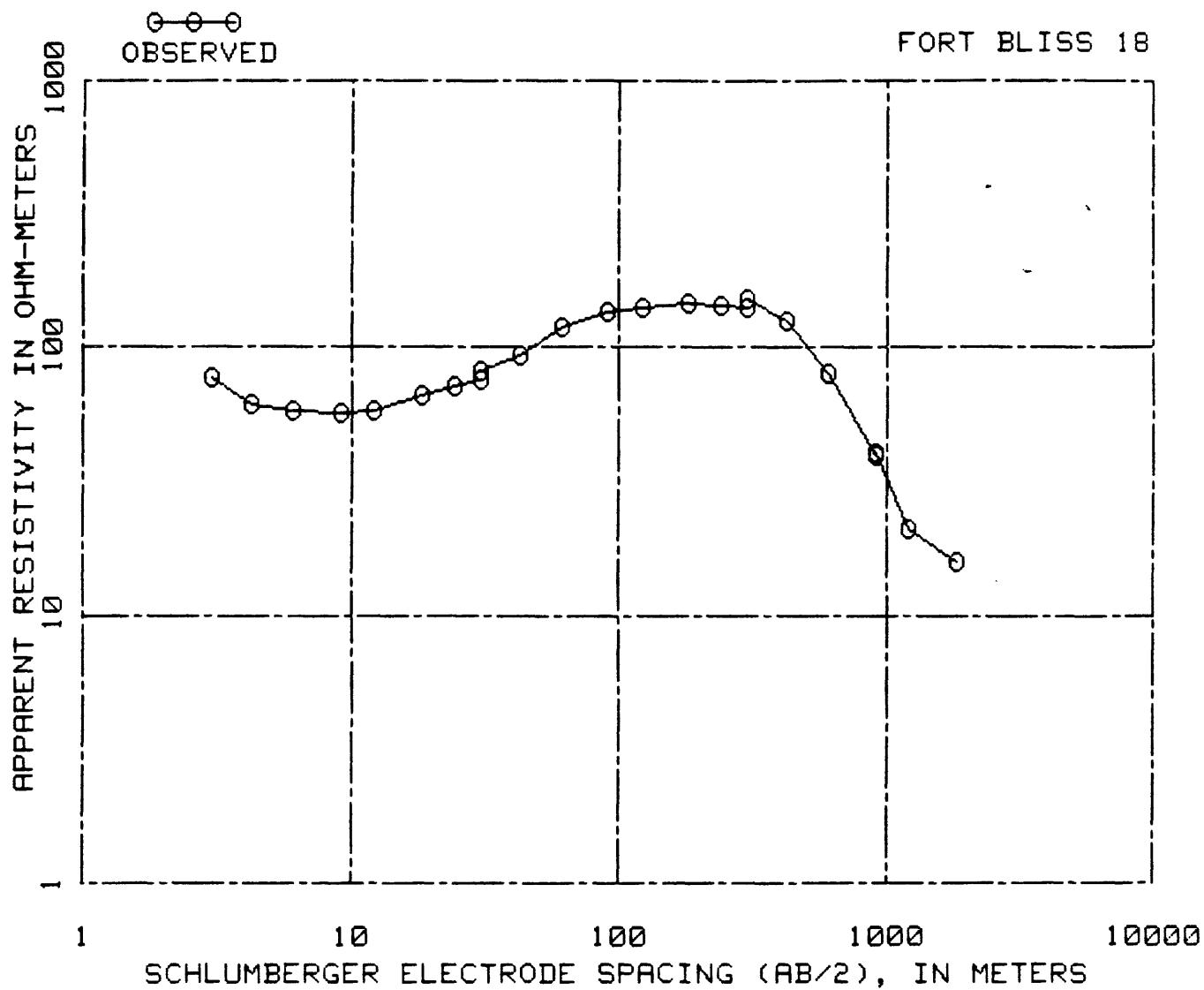


INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.15	28.01	12.58	1404.78
.21	39.21	19.30	820.80
.31	34.91	29.19	404.35
.46	21.82	43.15	192.46
.67	16.33	63.85	135.91
.97	34.28	95.57	248.43
1.40	76.59	138.34	403.20
1.99	152.96	205.64	160.23
2.83	269.26	284.04	19.67
4.11	442.15	353.12	.62
6.14	646.12	561.51	1.65
9.31	852.54	1000560.51	19.44

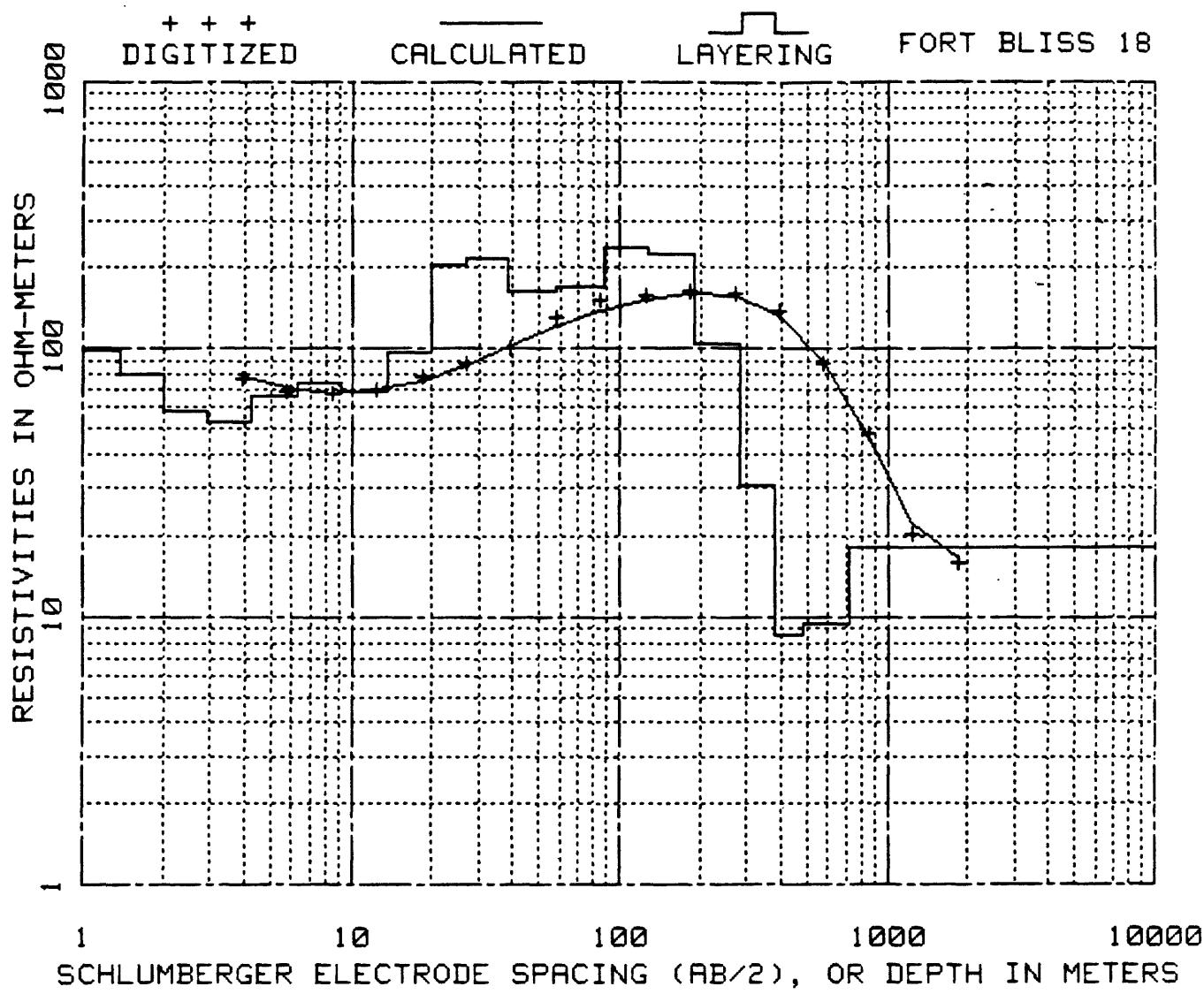




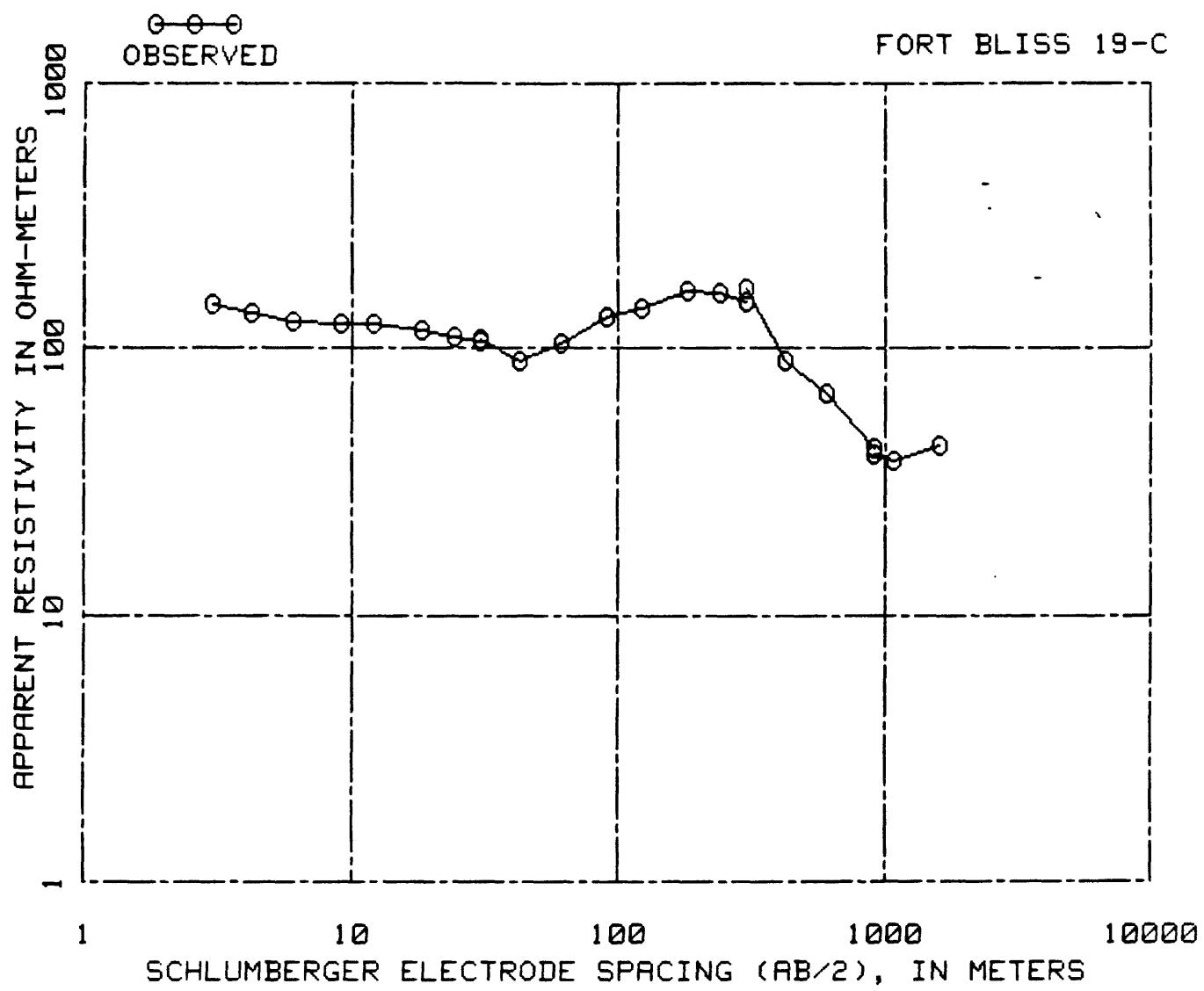
INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.11	27.94	10.49	433.37
.16	44.39	15.66	281.32
.24	76.86	23.41	386.36
.35	63.69	30.93	1266.82
.51	21.75	45.10	1098.89
.76	23.15	68.47	239.17
1.13	73.24	98.87	59.26
1.58	211.79	149.98	71.04
2.22	442.19	203.26	344.17
3.18	750.78	300.18	22.25
4.75	941.10	361.76	.27
6.91	923.20	1000360.76	11.16

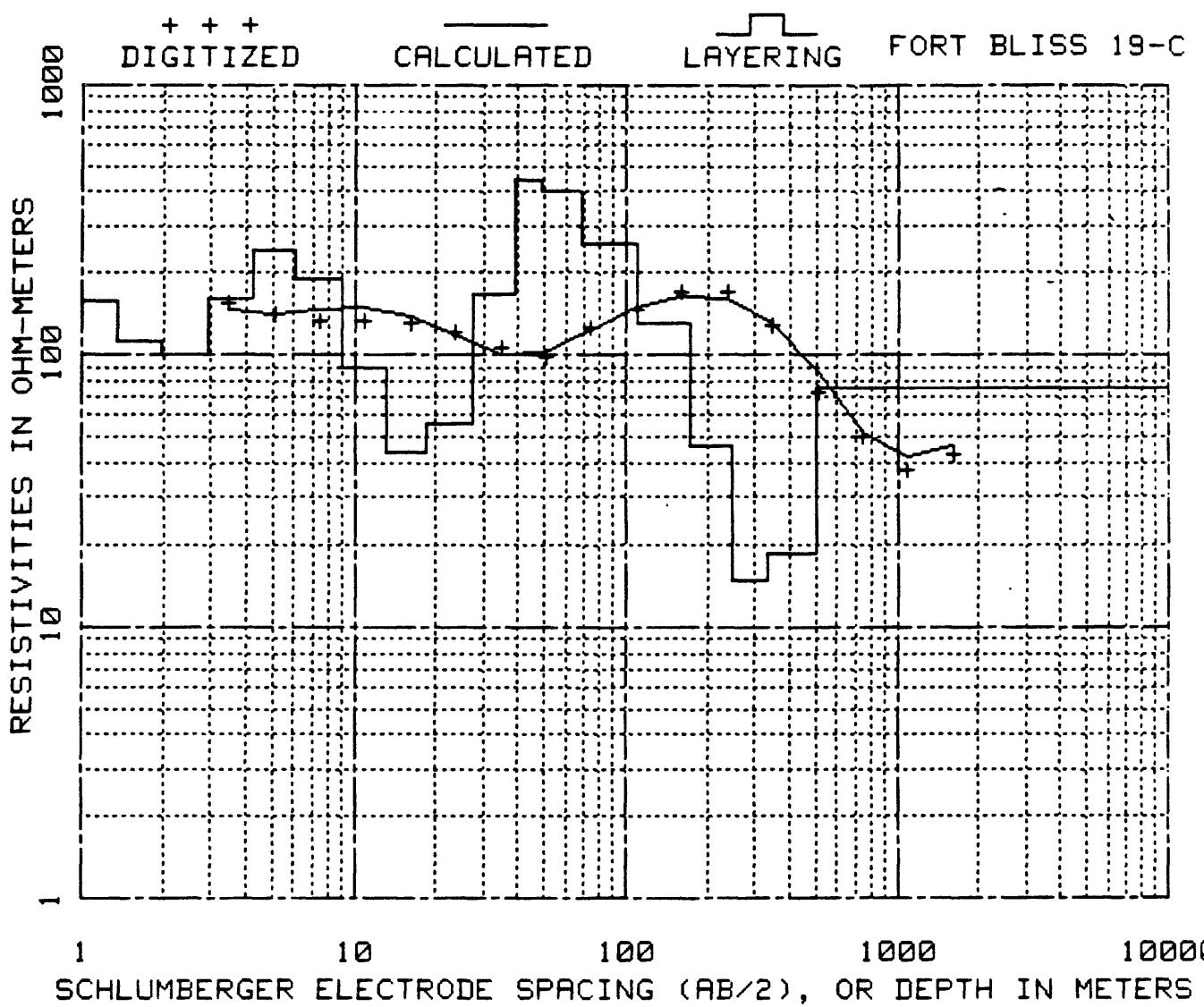


AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
3.05	77.50	91.44	137.00
4.27	62.00	121.92	140.00
6.10	58.00	182.88	145.00
9.14	57.00	243.84	144.00
12.19	58.50	304.80	140.00
18.29	66.00	304.80	153.00
24.38	72.00	426.72	125.00
30.48	76.00	609.60	80.00
30.48	81.00	914.40	40.00
42.67	93.00	914.40	41.00
60.96	120.00	1219.20	21.20
		1828.80	16.00

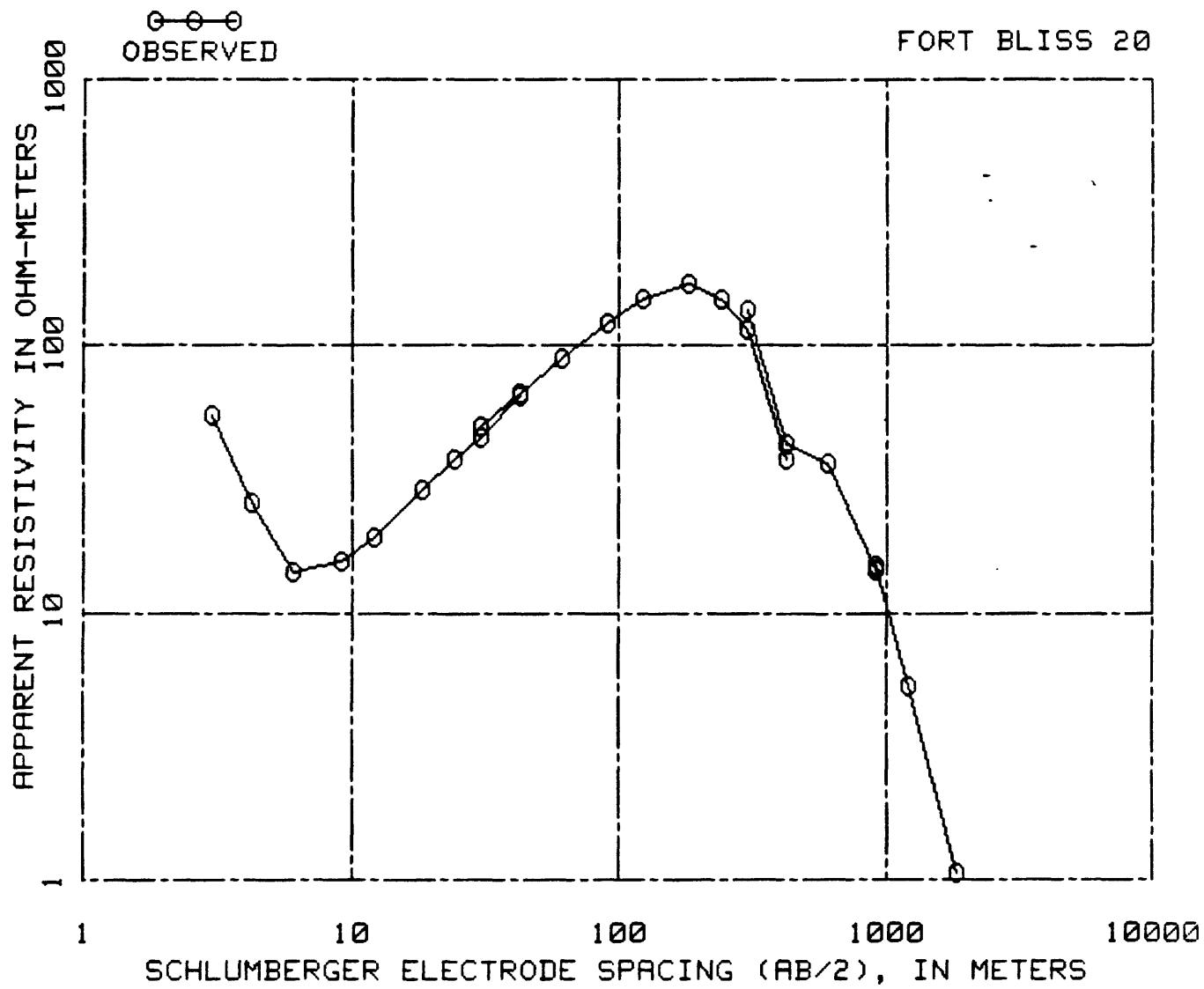


INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.30	98.49	19.84	96.11
.43	98.05	26.69	207.13
.64	98.66	37.99	218.84
.93	100.30	57.82	162.45
1.37	97.85	87.13	169.31
2.01	80.47	127.44	237.85
2.92	58.31	189.85	225.31
4.28	52.91	279.71	103.43
6.31	66.81	379.49	30.75
9.27	74.82	486.50	8.49
13.65	69.02	721.68	9.32
		1000720.68	18.22





INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.20	176.77	13.09	90.54
.29	174.07	18.45	43.99
.43	176.95	27.51	56.16
.63	186.18	38.74	166.58
.93	189.87	48.52	444.44
1.36	158.85	68.47	403.46
1.98	111.42	109.83	259.30
2.89	101.07	171.89	129.75
4.25	160.25	246.54	46.50
6.06	244.68	331.01	14.84
8.99	191.20	506.66	18.47
		1000505.66	75.60

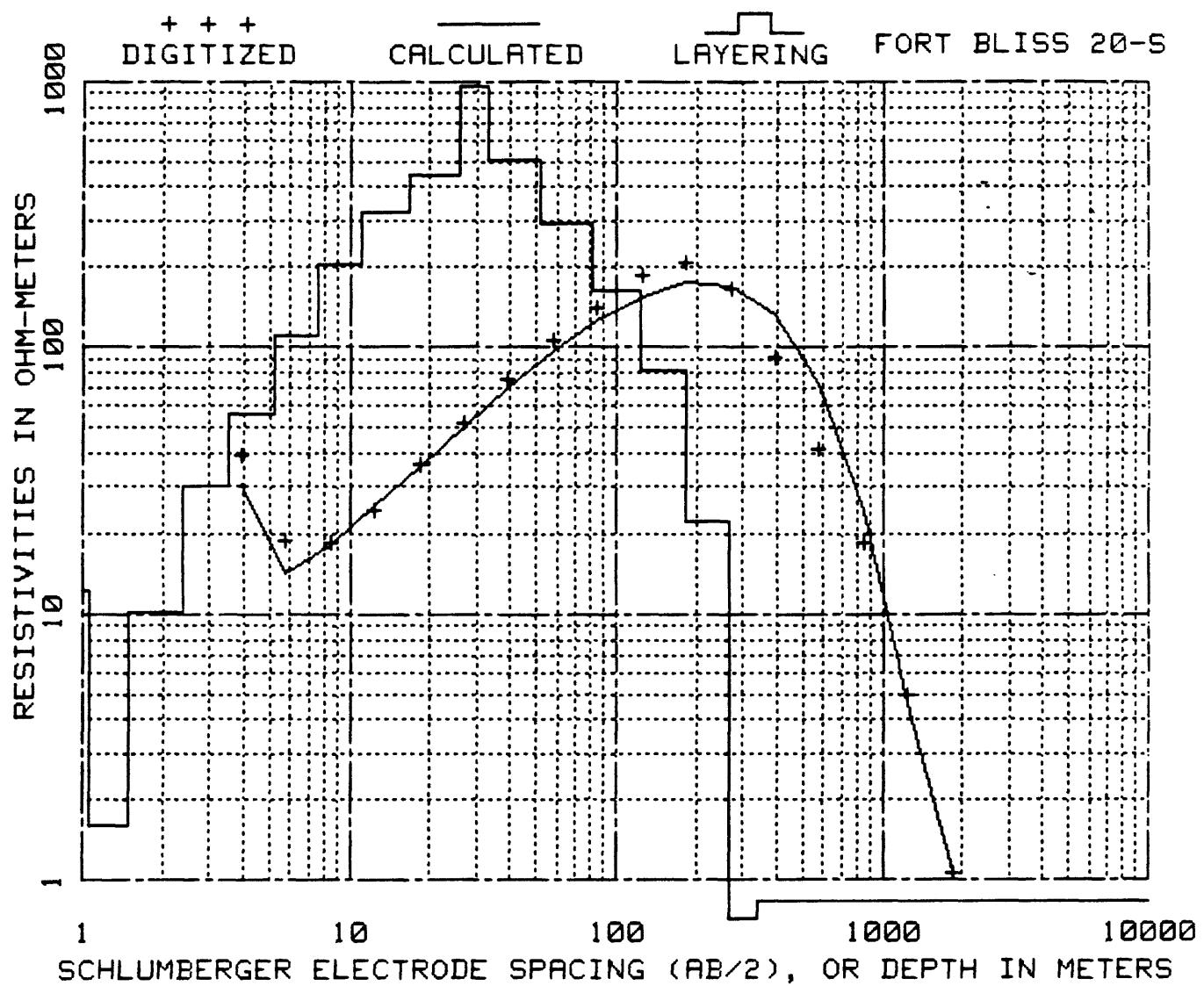


AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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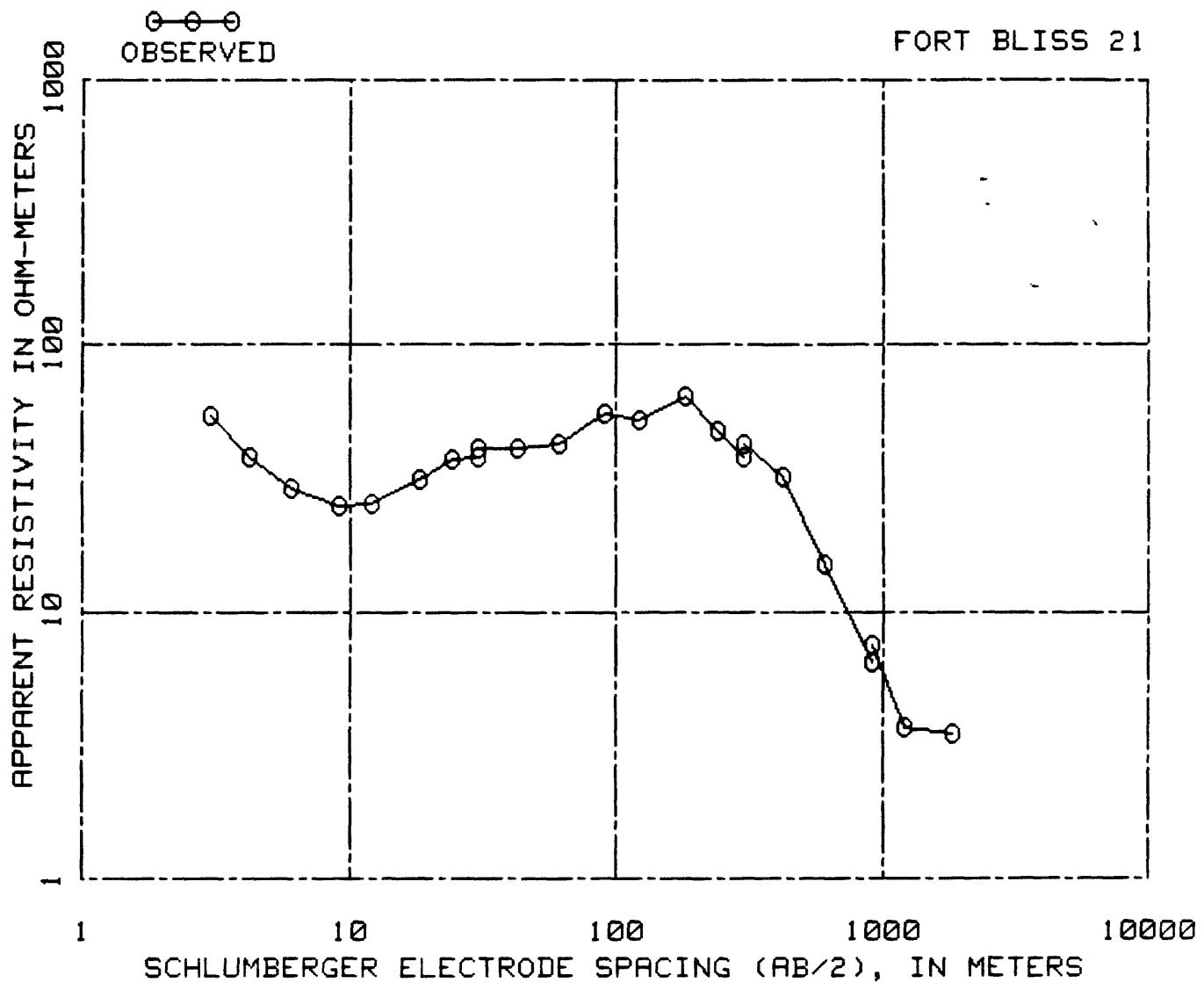
3.05	55.00
4.27	26.00
6.10	14.20
9.14	15.50
12.19	19.10
18.29	28.80
24.38	38.00
30.48	46.00
42.67	65.00
30.48	50.00
42.67	66.50
60.96	90.00

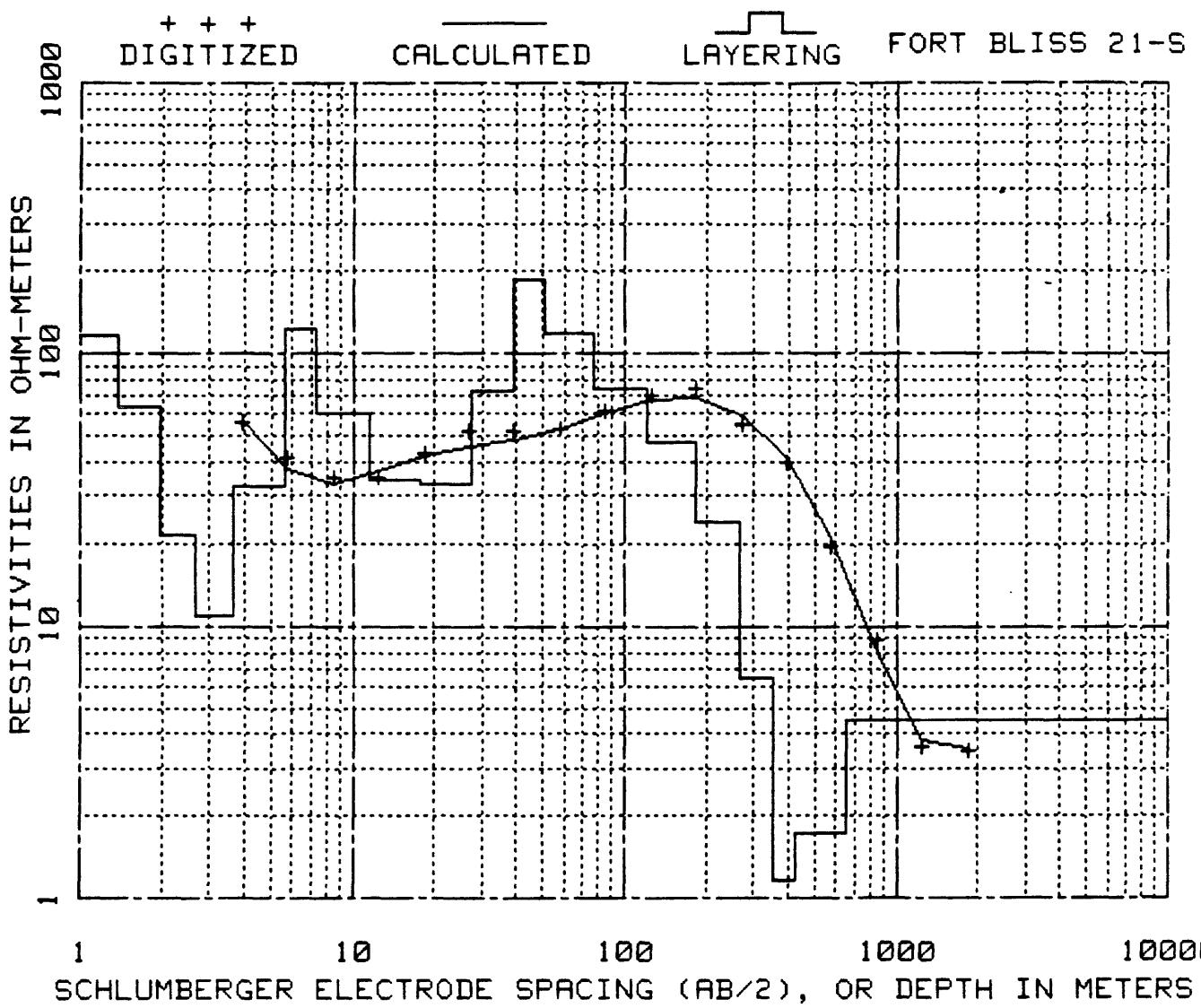
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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91.44	121.00
121.92	150.00
182.88	170.00
243.84	150.00
304.80	115.00
426.72	37.50
304.80	137.00
426.72	43.00
609.60	36.10
914.40	14.50
914.40	15.00
1219.20	5.40
1828.80	1.07

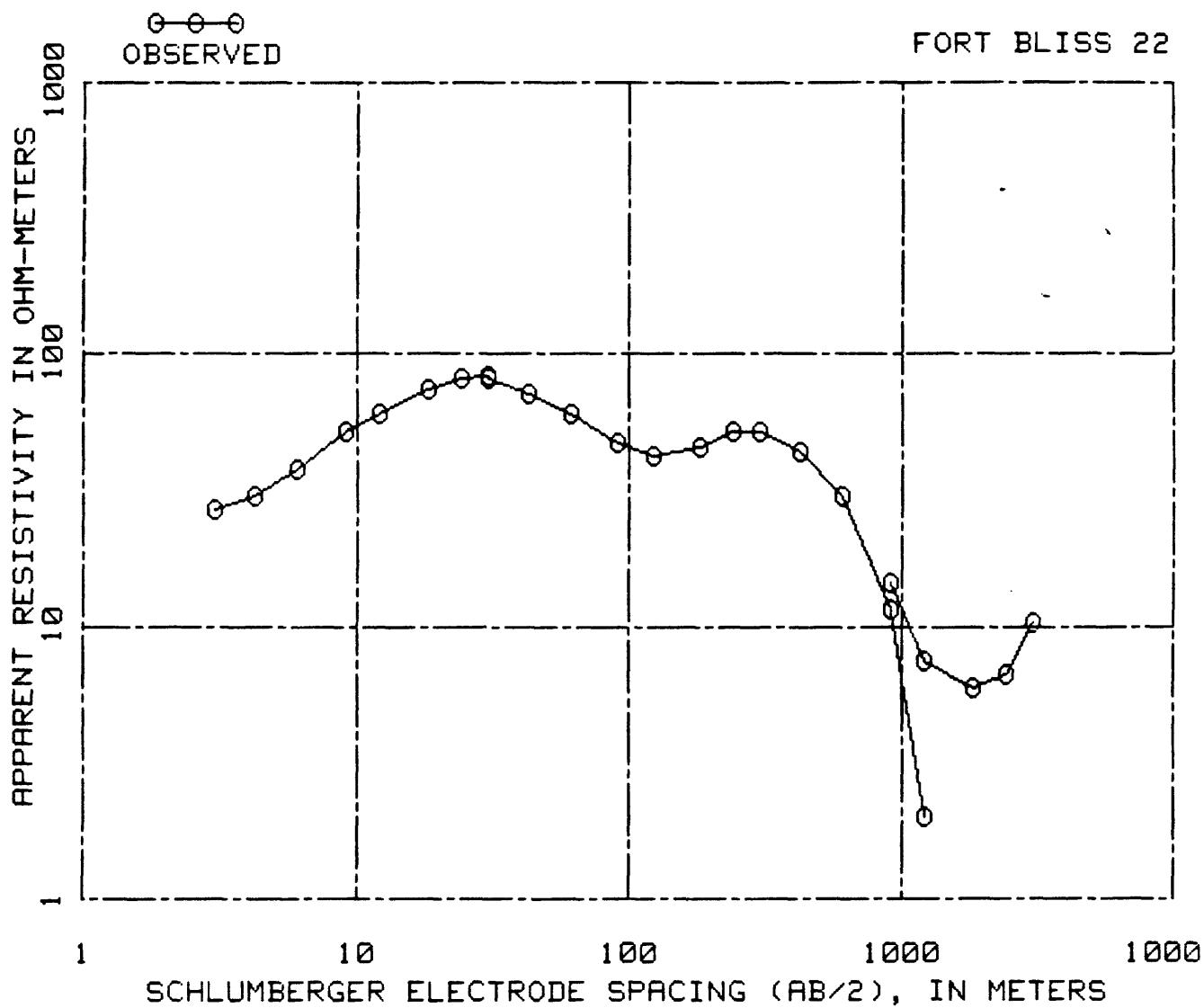


INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.13	1120.56	7.60	110.26
.20	597.59	11.13	203.97
.29	360.15	16.75	322.69
.42	792.34	25.67	446.67
.51	3508.00	33.04	965.26
.78	263.78	51.78	503.79
1.06	12.34	80.88	292.60
1.48	1.61	122.82	163.66
2.36	10.13	182.70	81.87
3.50	30.11	263.53	22.44
5.20	55.80	340.16	.72
		1000339.16	.83

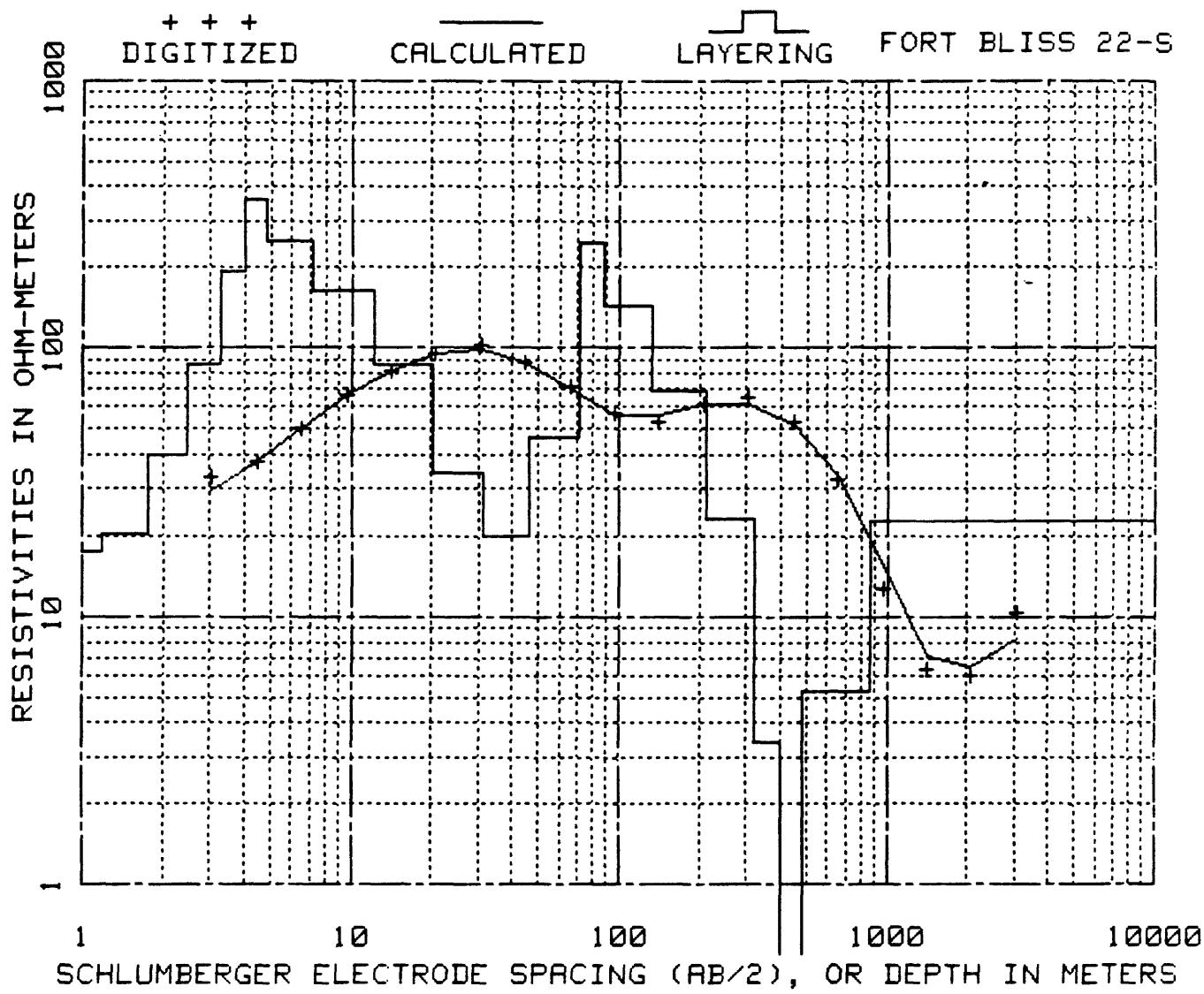




INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.30	126.94	17.84	34.61
.43	126.16	27.17	33.01
.64	128.80	39.33	72.73
.93	132.46	50.53	186.58
1.37	115.75	76.94	117.94
1.97	63.84	120.64	73.73
2.67	21.49	182.82	47.43
3.66	10.97	265.29	23.87
5.68	32.26	351.67	6.51
7.32	123.70	425.60	1.16
11.51	60.43	649.78	1.74
		1000648.78	4.49



AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
3.05	27.00	182.88	46.00
4.27	30.00	243.84	52.00
6.10	38.00	304.80	52.00
9.14	52.00	304.80	52.00
12.19	61.00	426.72	44.00
18.29	74.00	609.60	38.00
24.38	81.00	914.40	11.60
30.48	83.00	1219.20	2.00
30.48	82.00	914.40	14.50
42.67	72.00	1219.20	7.50
60.96	60.00	1828.80	6.00
91.44	47.00	2438.40	6.70
121.92	42.00	3048.00	10.30

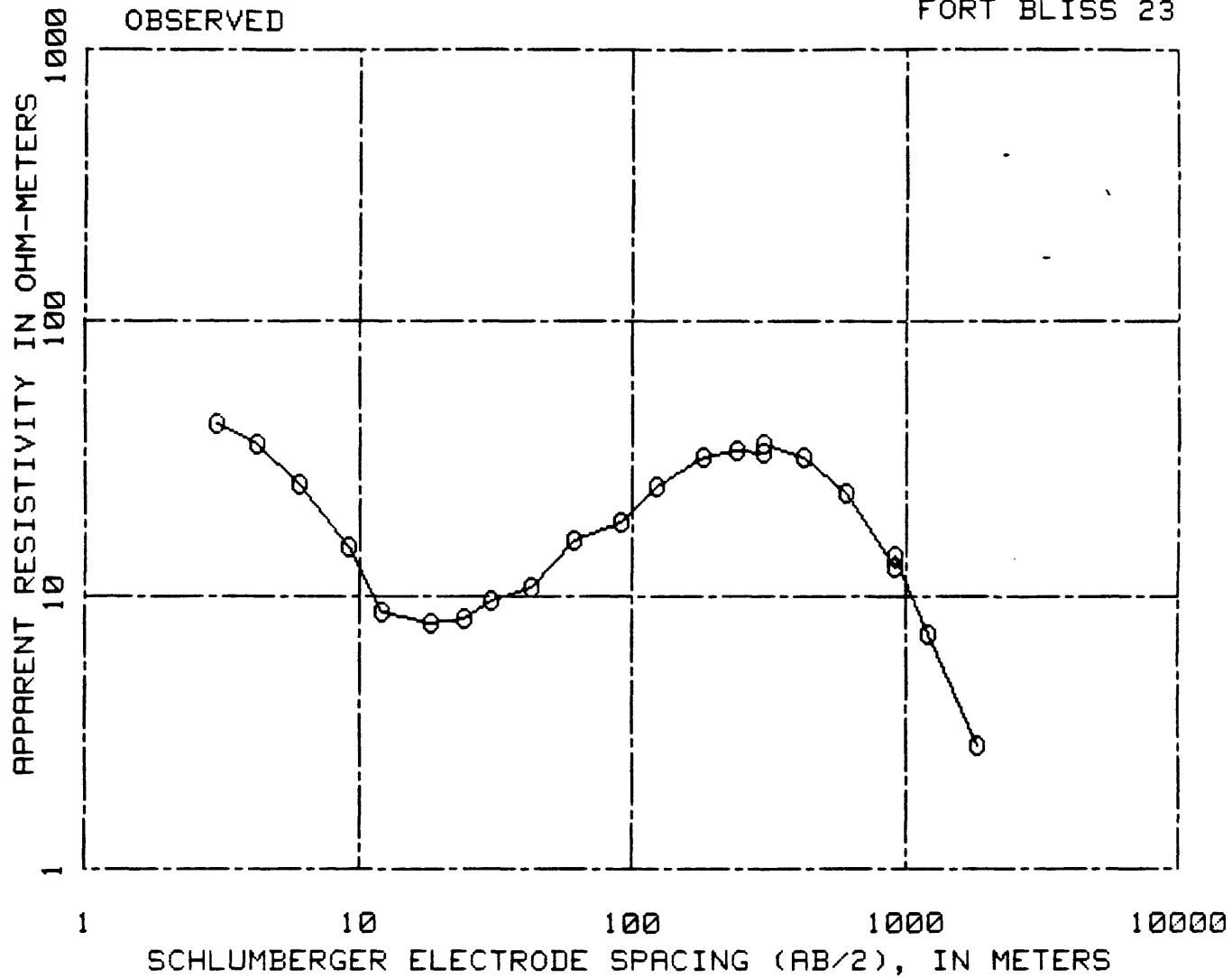


INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
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.18	25.63	12.27	163.99
.26	26.30	20.42	85.91
.38	28.05	30.99	34.66
.56	28.52	45.97	19.83
.81	23.41	71.90	46.72
1.19	17.60	87.52	248.03
1.75	20.33	132.02	143.08
2.48	40.07	214.10	69.61
3.24	86.15	317.85	23.36
3.99	192.58	405.59	3.42
4.84	363.25	489.33	.53
7.15	251.87	865.69	5.27
		1000864.69	22.87

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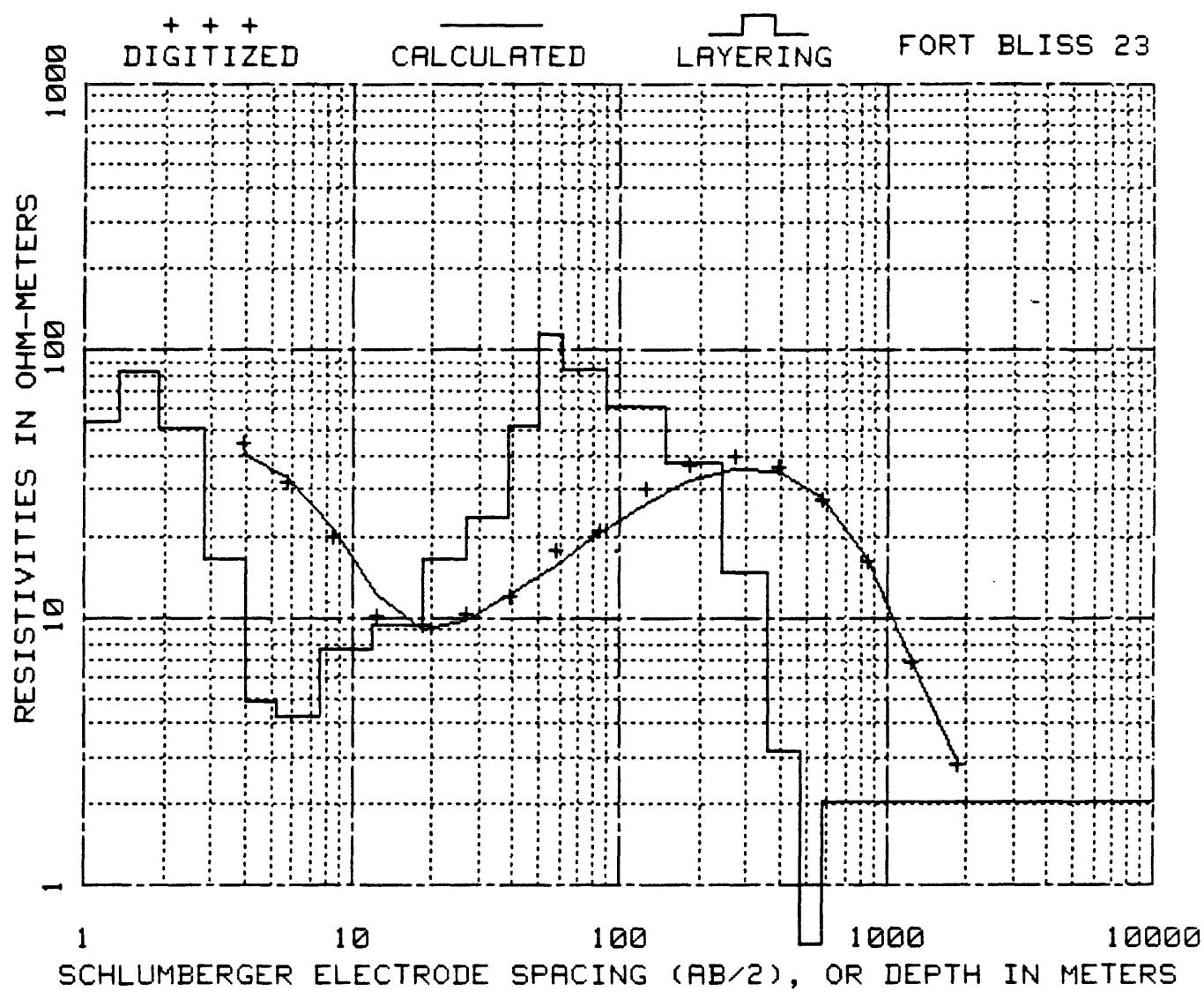


AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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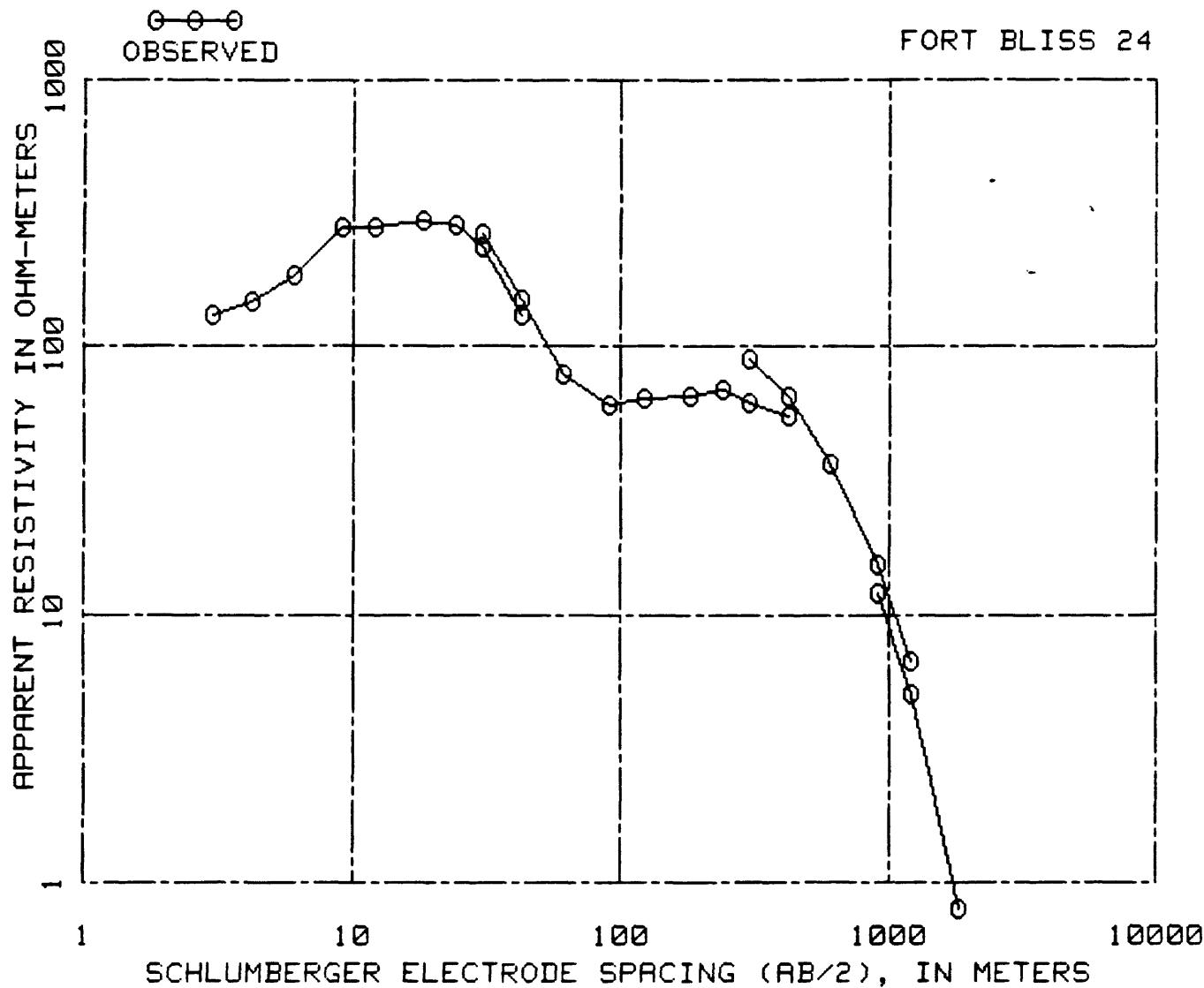
3.05	42.00
4.27	36.00
6.10	25.50
9.14	15.00
12.19	8.00
18.29	8.00
24.38	8.20
30.48	9.50
30.48	9.50
42.67	10.70
60.96	16.00

AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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91.44	18.50
121.92	25.00
182.88	31.80
243.84	34.00
304.80	33.00
304.80	35.50
426.72	32.00
609.60	23.50
914.40	12.80
914.40	14.00
1219.20	7.20
1828.80	2.84



INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.30	35.50	18.38	9.38
.43	35.16	26.79	16.40
.64	33.97	38.16	23.49
.93	36.55	49.59	52.51
1.35	54.33	60.86	115.53
1.89	82.93	89.41	84.20
2.83	51.50	147.31	62.00
4.00	16.44	241.25	37.49
5.27	4.88	361.75	14.70
7.63	4.29	474.07	3.14
11.96	7.65	577.26	.61
		1000576.26	2.06

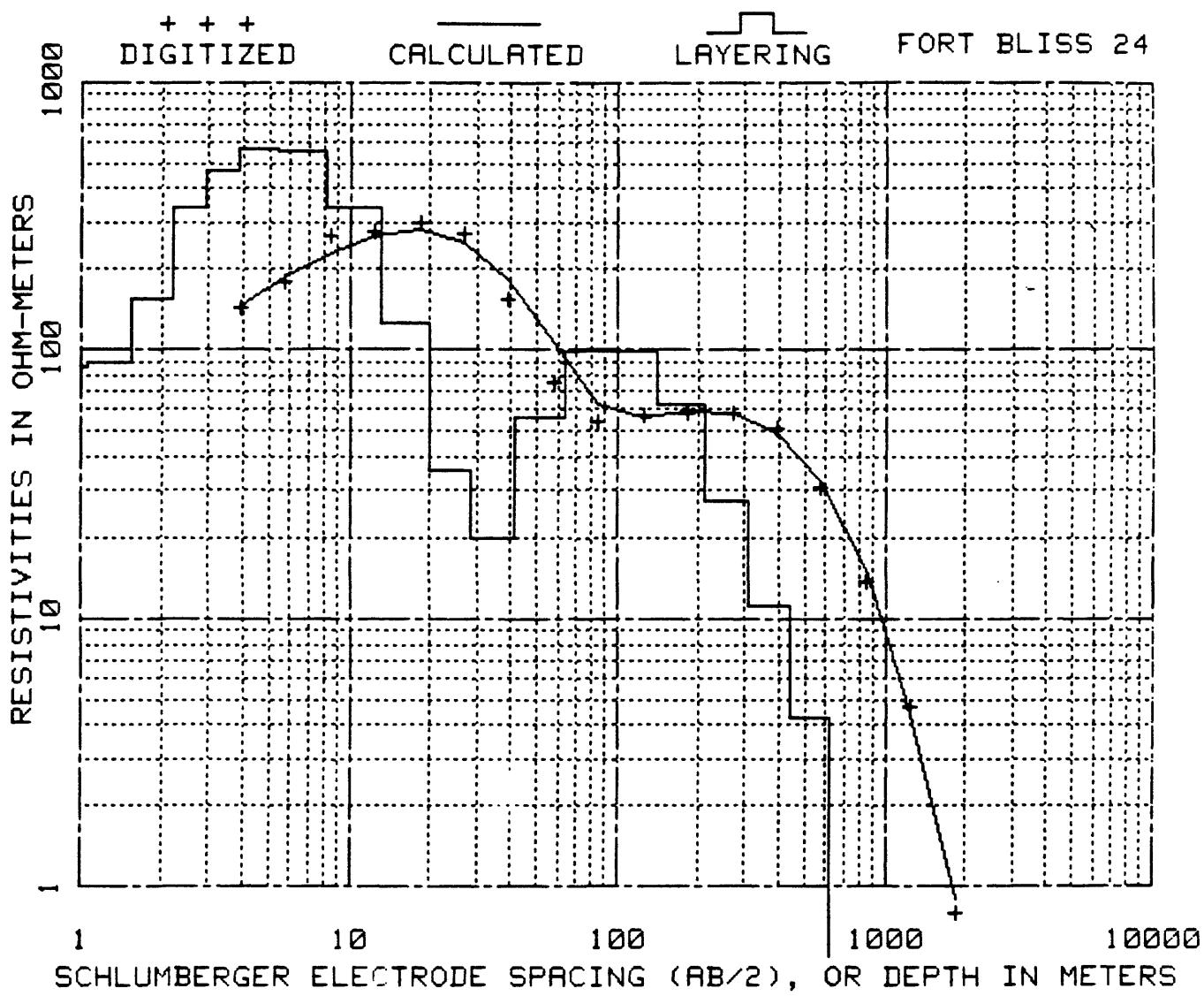


AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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3.05	131.00
4.27	146.00
6.10	185.00
9.14	275.00
12.19	275.00
18.29	293.00
24.38	280.00
30.48	235.00
42.67	130.00
30.48	264.00
42.67	148.00
60.96	78.00
91.44	60.00

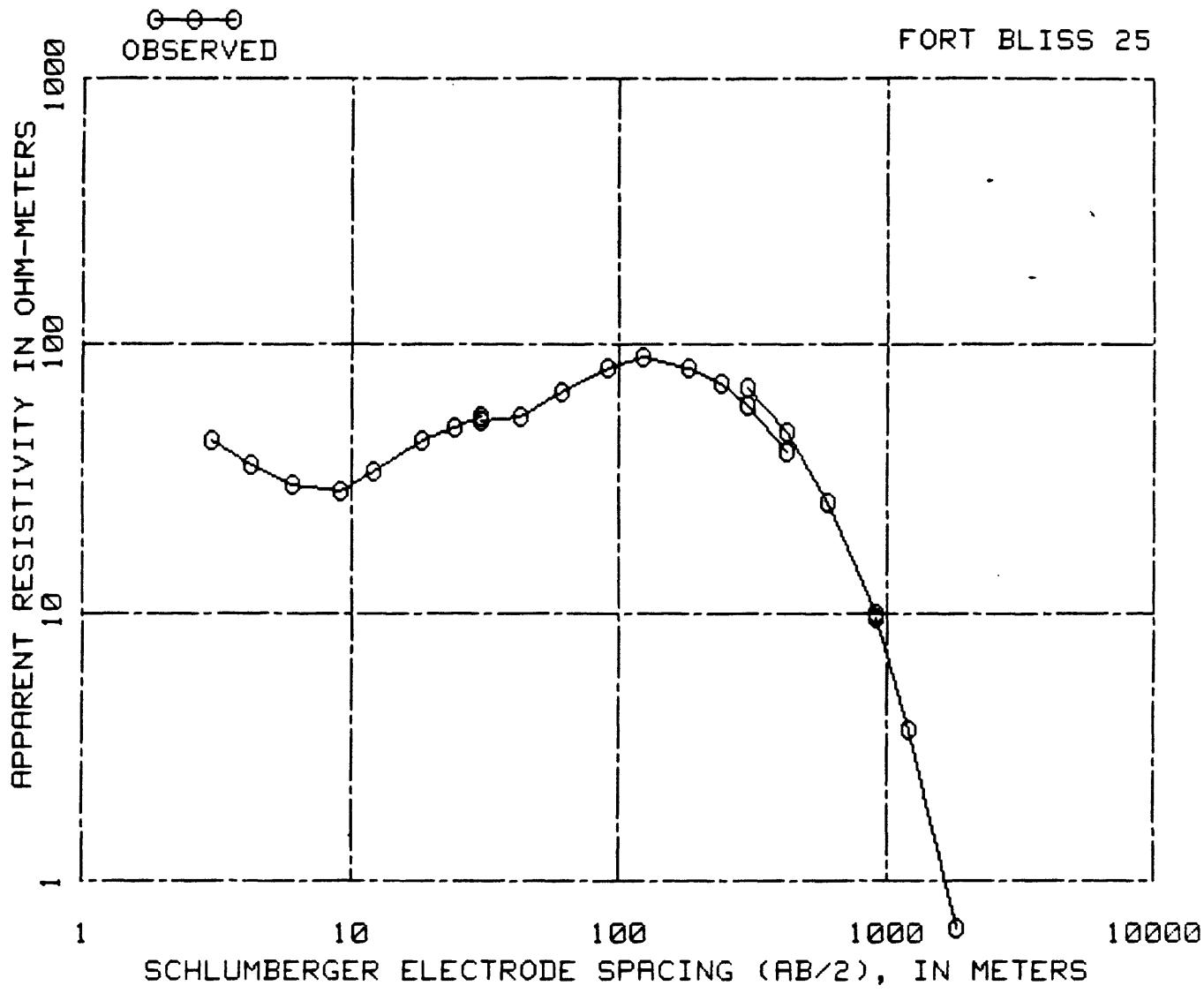
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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121.92	64.00
182.88	65.00
243.84	68.40
304.80	61.20
426.72	55.00
304.80	90.00
426.72	65.00
609.60	36.30
914.40	15.20
1219.20	6.75
914.40	12.00
1219.20	5.10
1828.80	.80



INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
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.23	94.24	13.15	342.84
.33	93.64	19.90	126.78
.49	98.27	28.17	35.51
.72	97.99	41.01	19.88
1.05	86.59	63.82	56.12
1.55	89.49	93.02	99.24
2.21	154.34	139.01	99.18
2.90	341.83	211.30	62.70
3.89	472.38	310.98	27.67
5.48	561.11	443.53	11.08
8.22	560.71	623.30	4.24
		1000622.30	.27

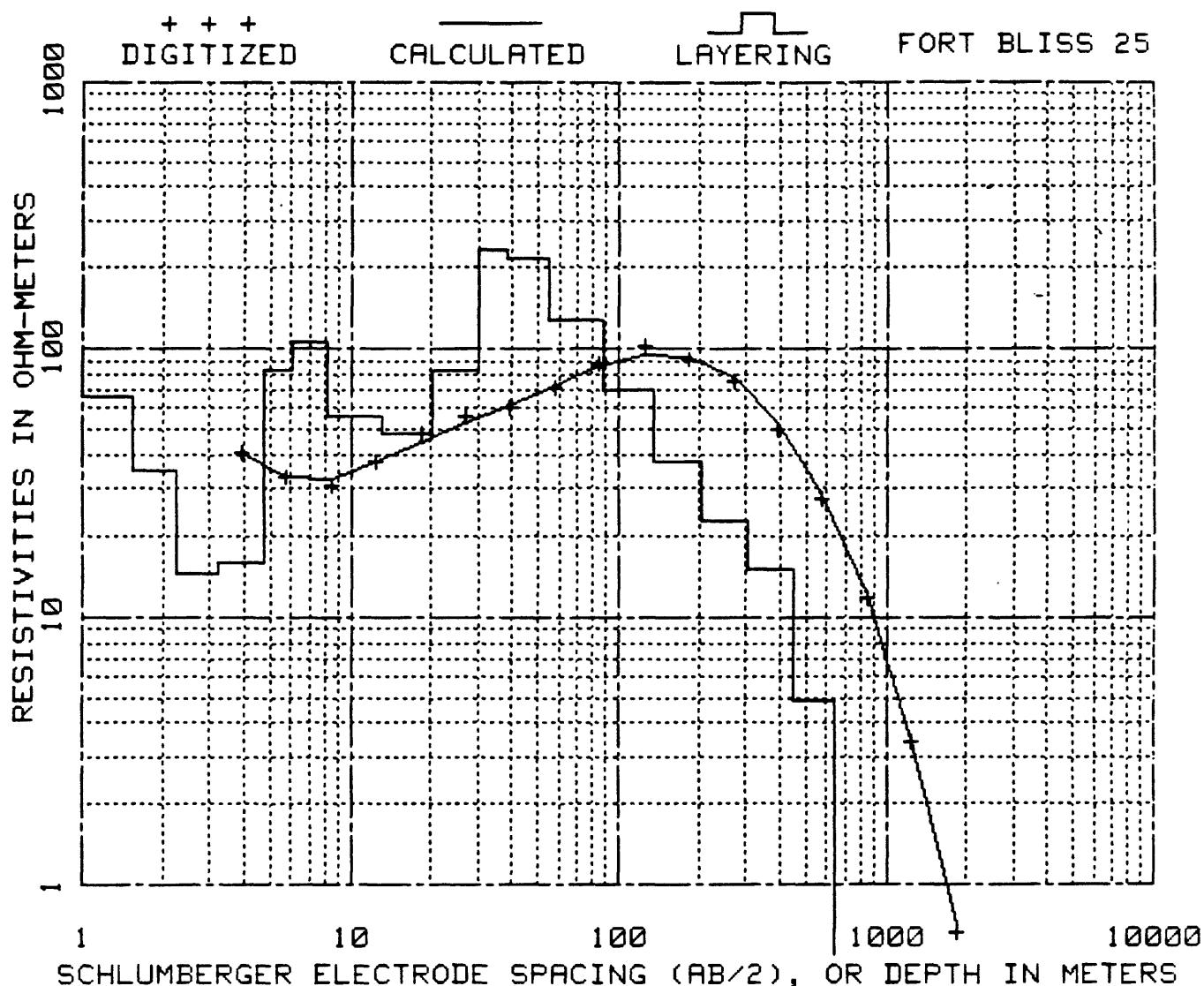


AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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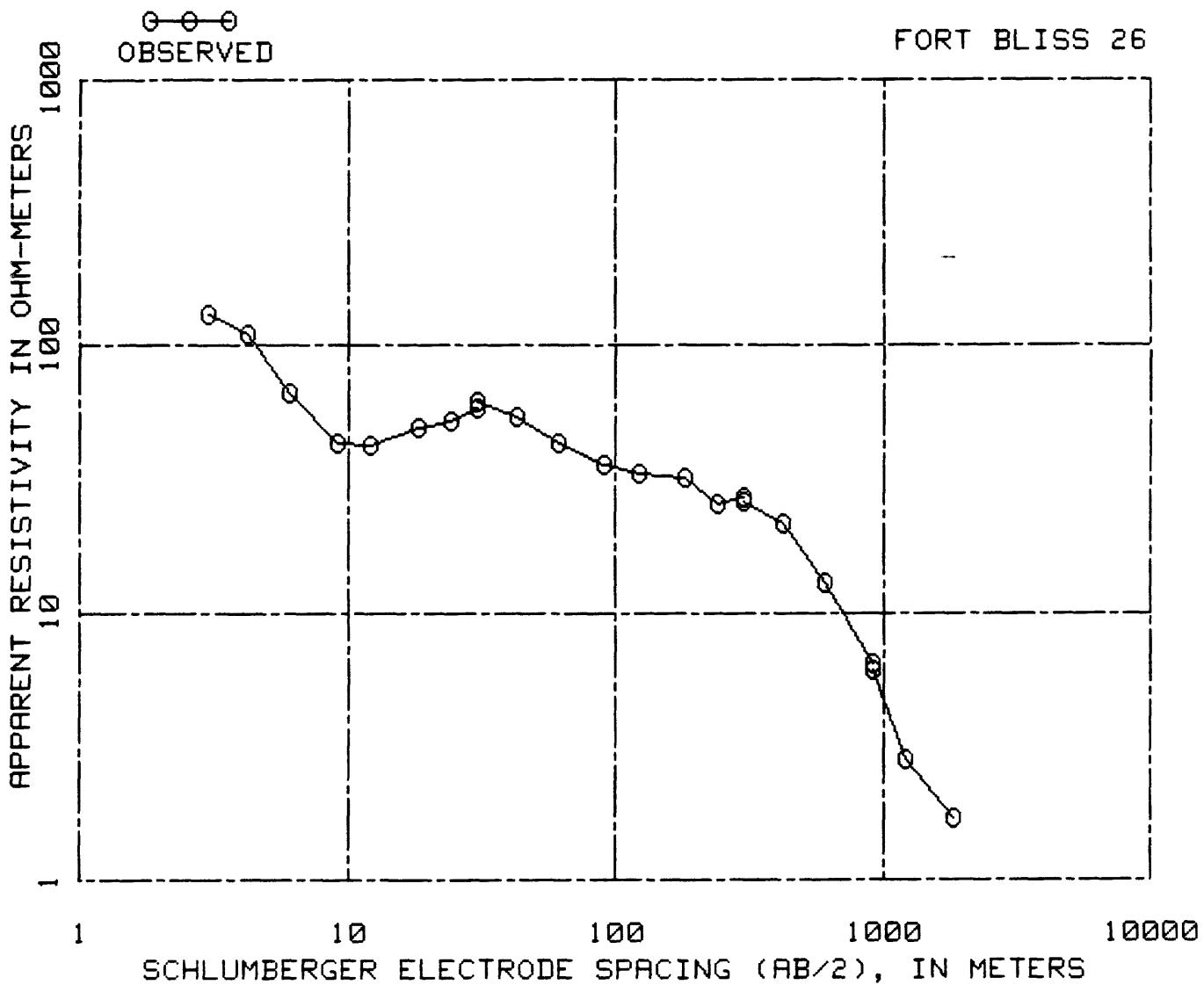
3.05	44.00
4.27	36.00
6.10	30.00
9.14	28.60
12.19	34.00
18.29	44.20
24.38	49.00
30.48	54.00
30.48	52.00
42.67	54.00
60.96	66.00
91.44	81.00

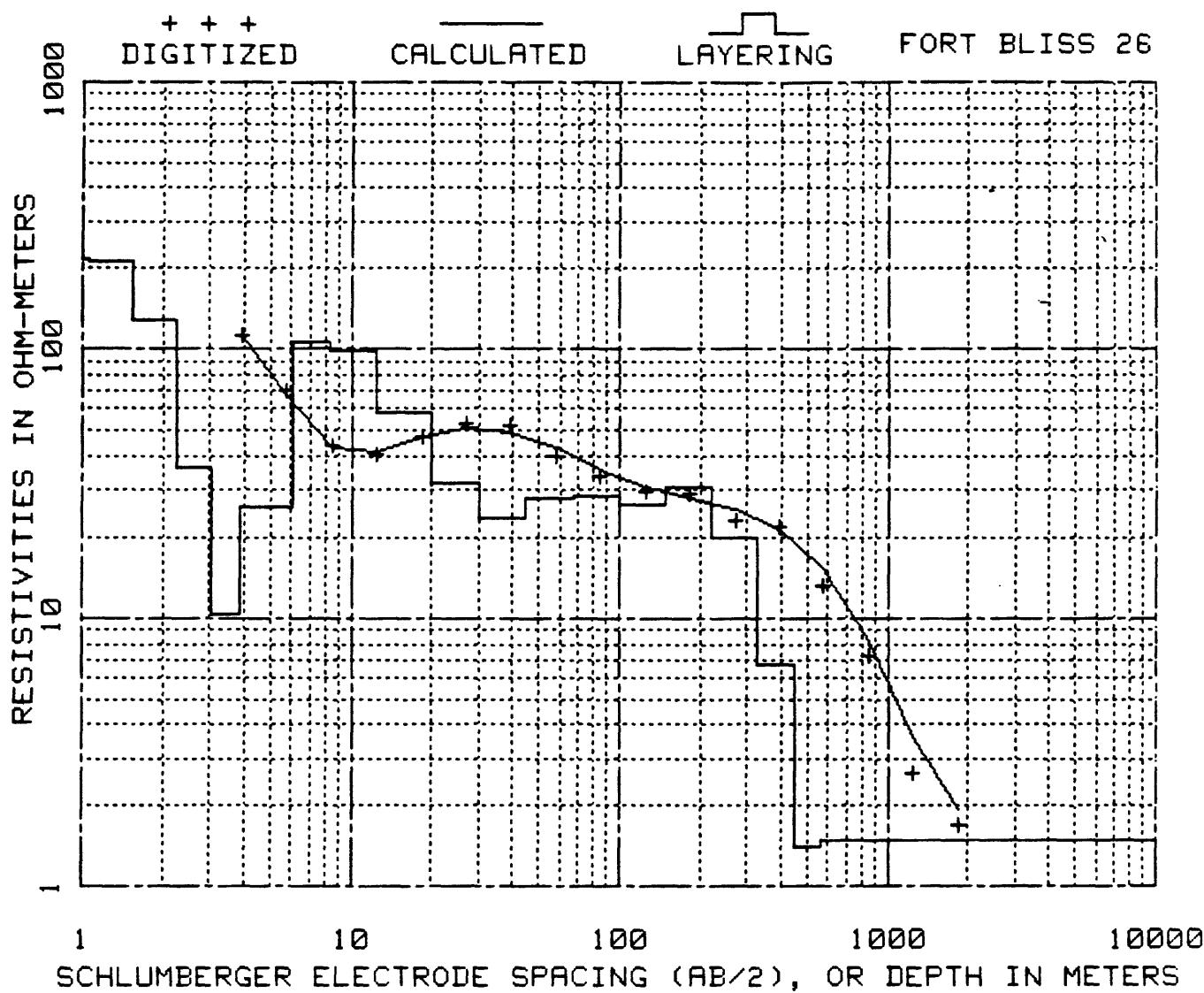
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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121.92	90.00
182.88	81.00
243.84	72.00
304.80	59.00
426.72	40.00
304.80	69.00
426.72	47.00
609.60	26.00
914.40	10.00
914.40	9.60
1219.20	3.70
1828.80	.66

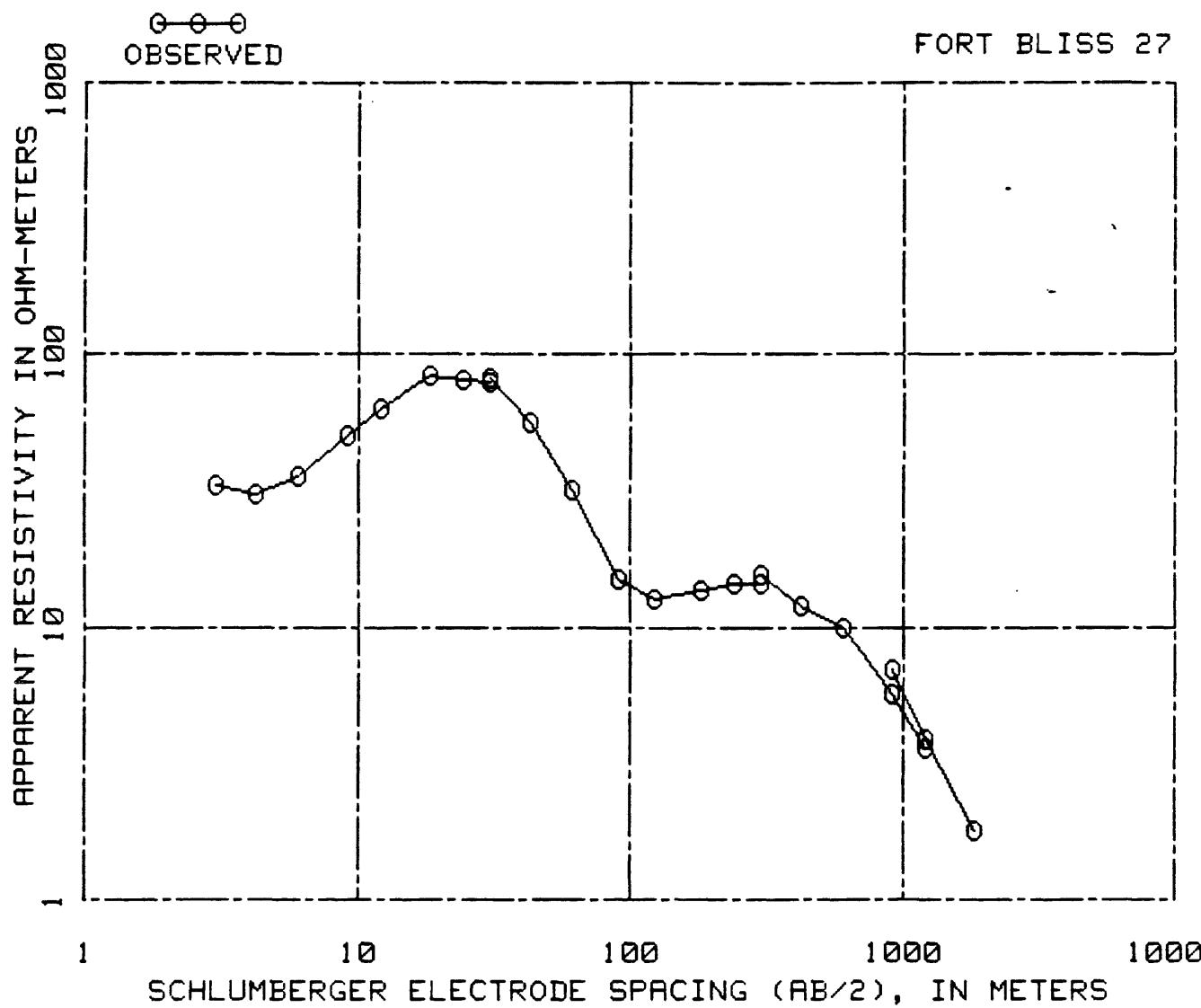


INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.23	60.74	13.07	56.31
.33	60.73	20.31	48.42
.49	58.55	29.89	82.95
.72	58.83	38.15	234.38
1.05	66.17	54.36	217.82
1.55	65.95	87.38	128.80
2.26	35.35	136.09	70.48
3.22	14.46	204.84	38.15
4.74	15.87	303.88	22.97
6.13	82.49	449.29	15.03
8.25	106.56	638.72	4.86
		1000637.72	.21



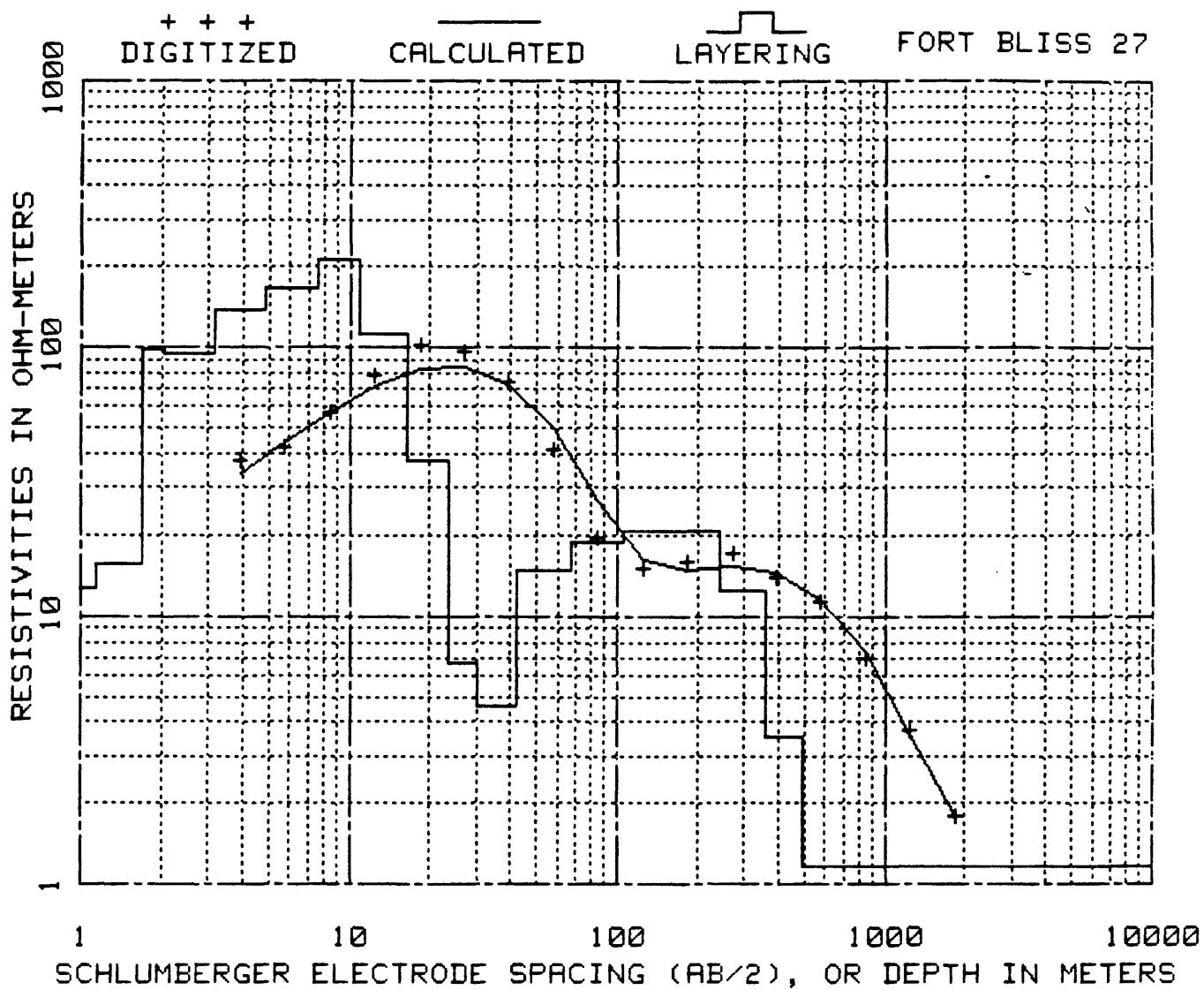


INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.23	203.28	12.48	98.77
.33	202.06	19.72	58.58
.49	196.86	29.82	31.74
.72	198.22	44.44	23.46
1.05	215.23	67.11	28.09
1.55	214.02	100.57	28.41
2.25	128.63	149.61	26.42
3.02	36.23	222.05	30.54
3.86	10.26	326.01	20.12
6.07	25.74	448.77	6.77
8.36	105.50	560.84	1.40
		1000559.84	1.49

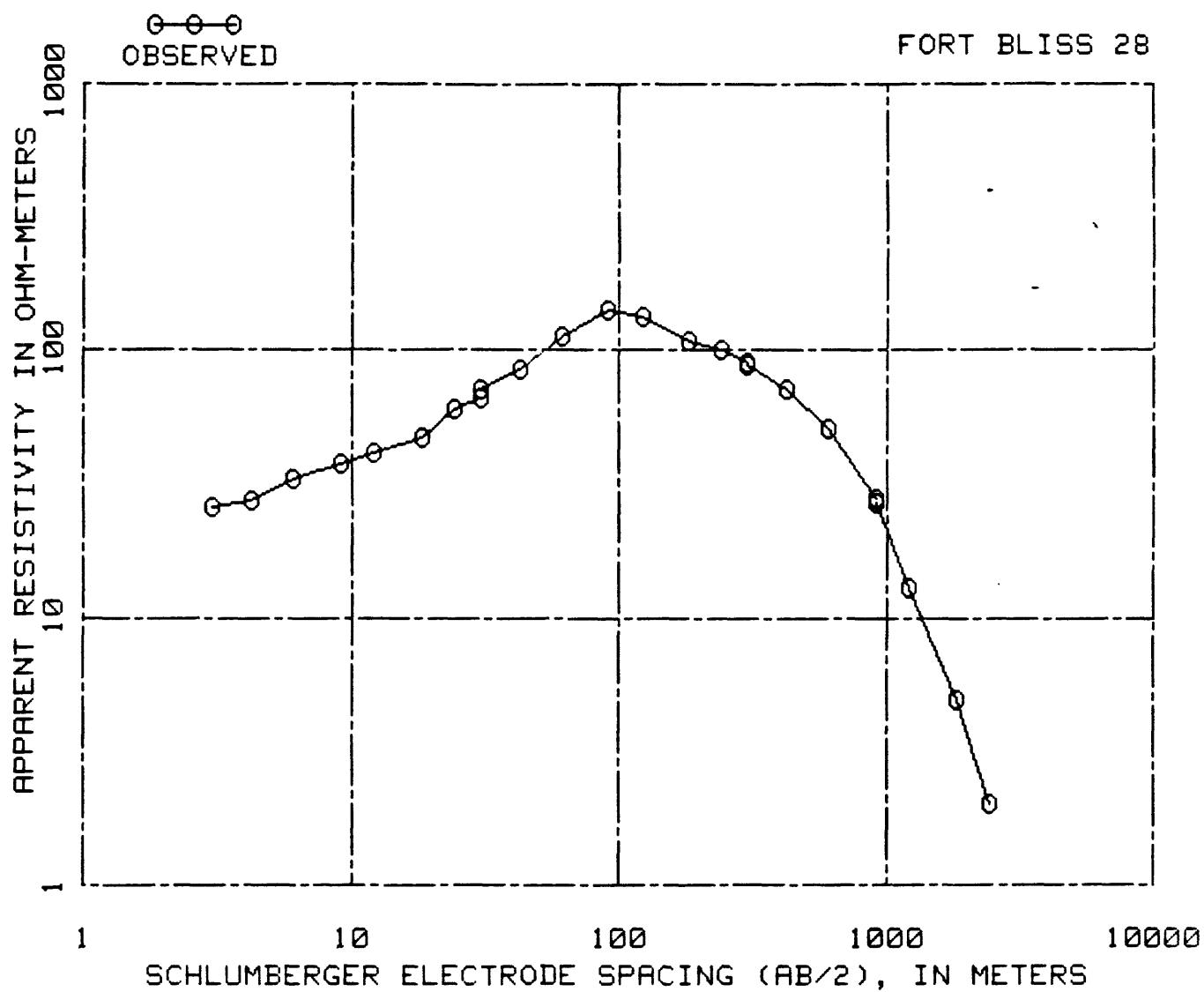


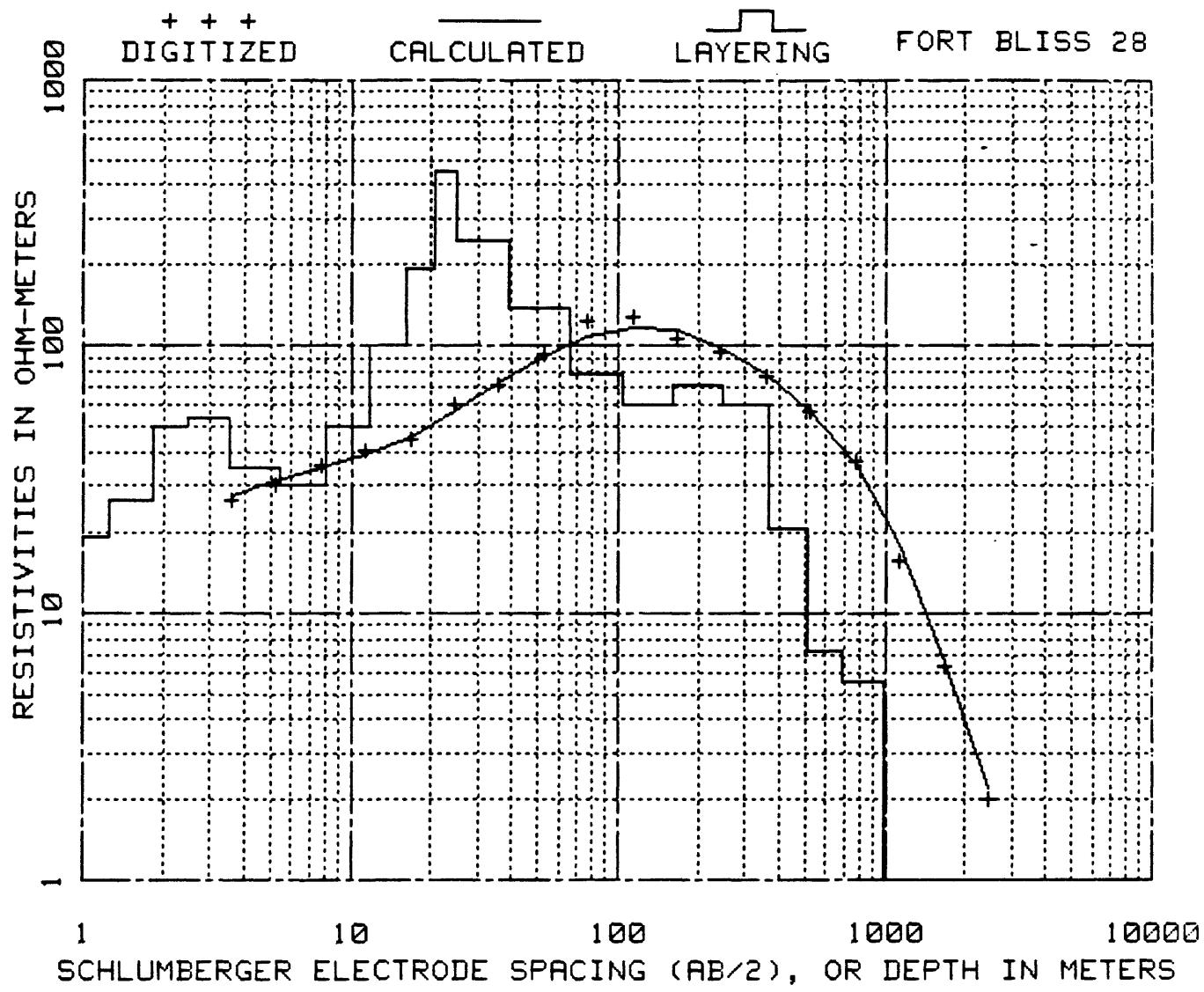
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
3.05	33.00
4.27	31.00
6.10	36.00
9.14	50.00
12.19	63.00
18.29	84.00
24.38	80.00
30.48	79.00
30.48	82.00
42.67	56.30
60.96	32.00
91.44	15.00

AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
121.92	12.80
182.88	13.60
243.84	14.50
304.80	14.50
304.80	15.70
426.72	12.10
609.60	10.00
914.40	5.70
1219.20	3.60
914.40	7.00
1219.20	3.90
1828.80	1.80

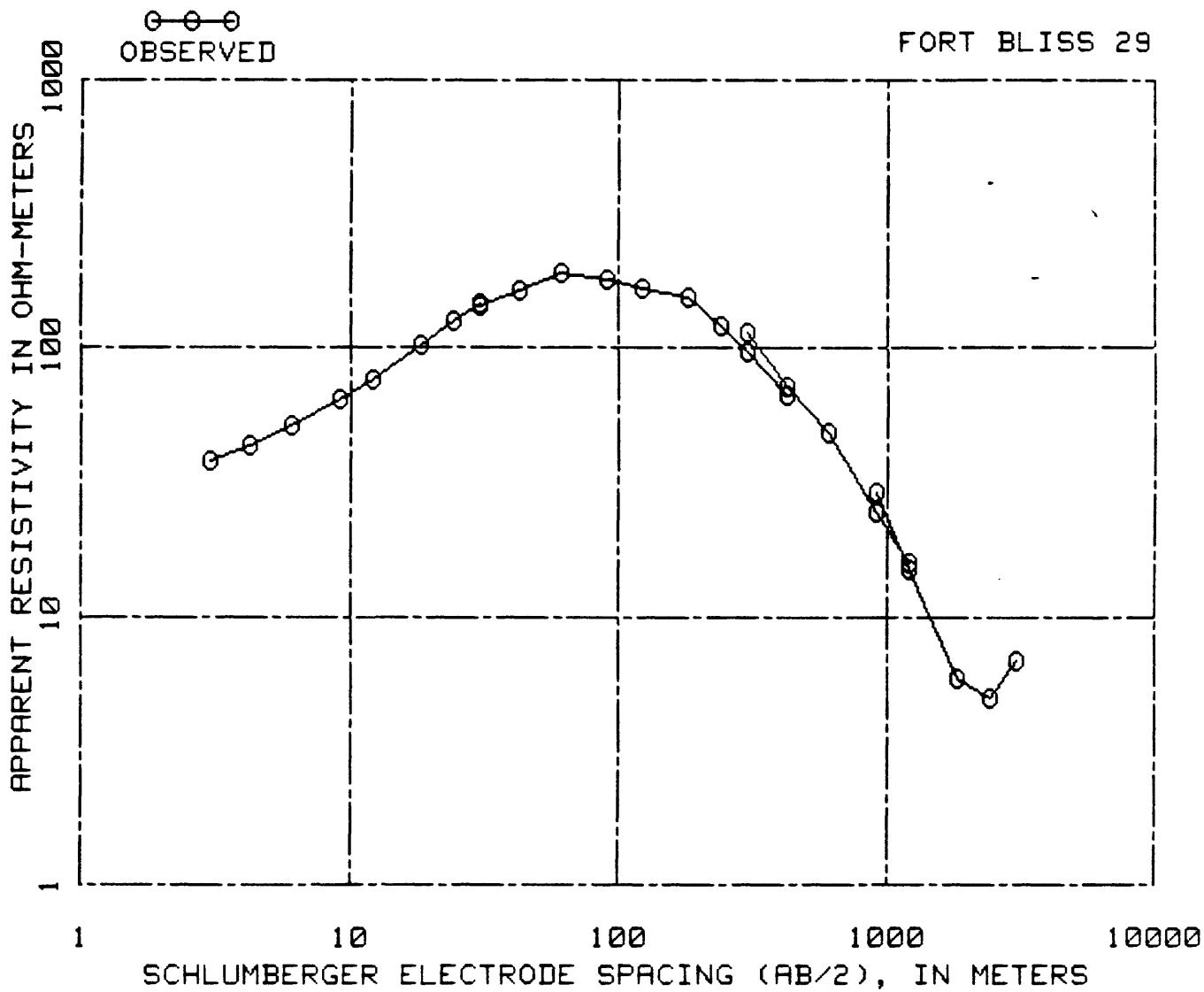


INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.17	23.87	10.78	214.66
.26	23.74	16.34	112.33
.37	33.11	23.33	37.57
.54	42.03	29.84	6.76
.79	26.34	42.11	4.58
1.15	12.72	67.94	14.79
1.70	15.63	104.93	18.74
2.06	99.50	159.04	20.79
3.13	95.74	239.79	20.62
4.81	139.22	357.89	12.37
7.56	165.35	496.36	3.56
		1000495.36	1.18

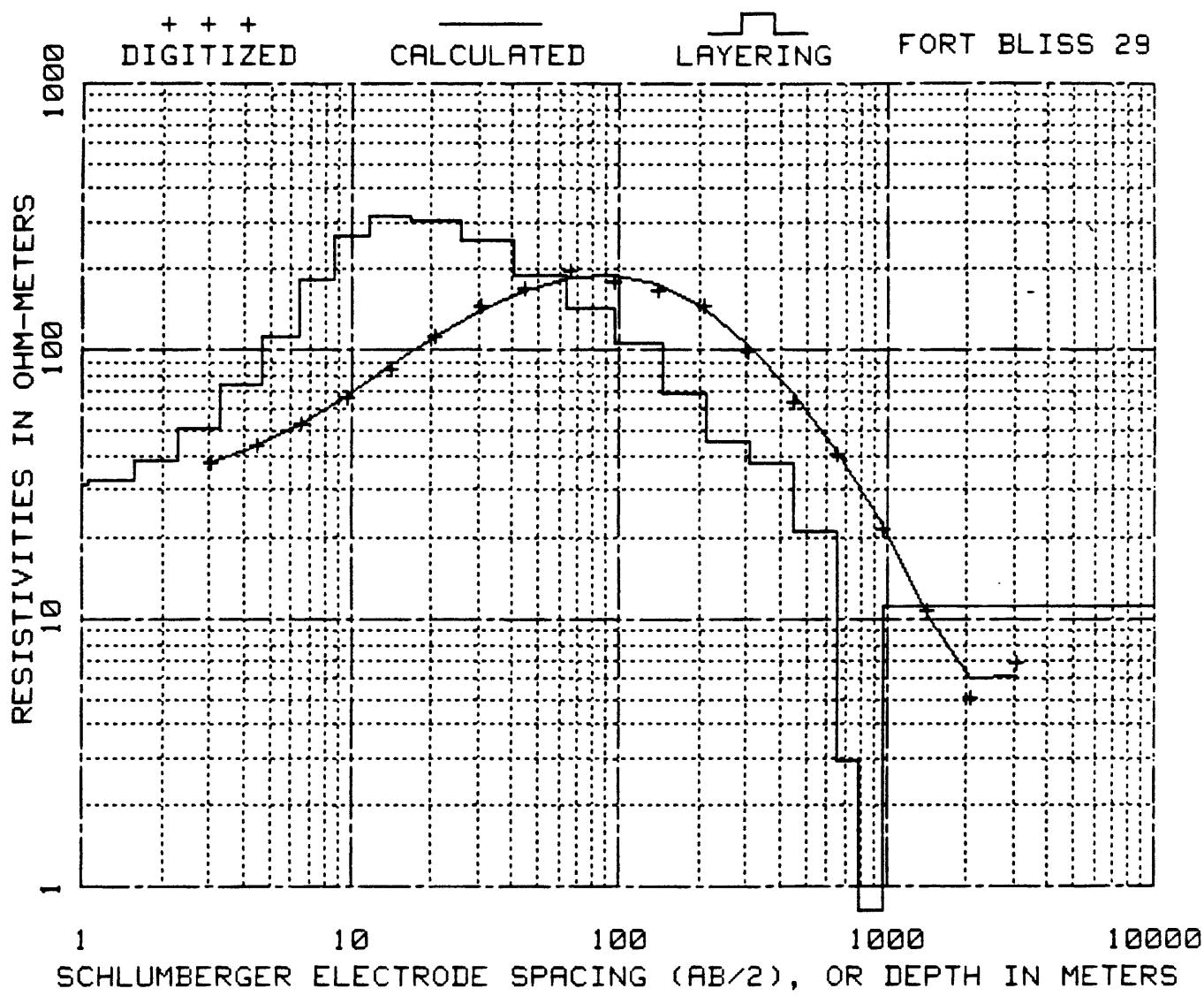




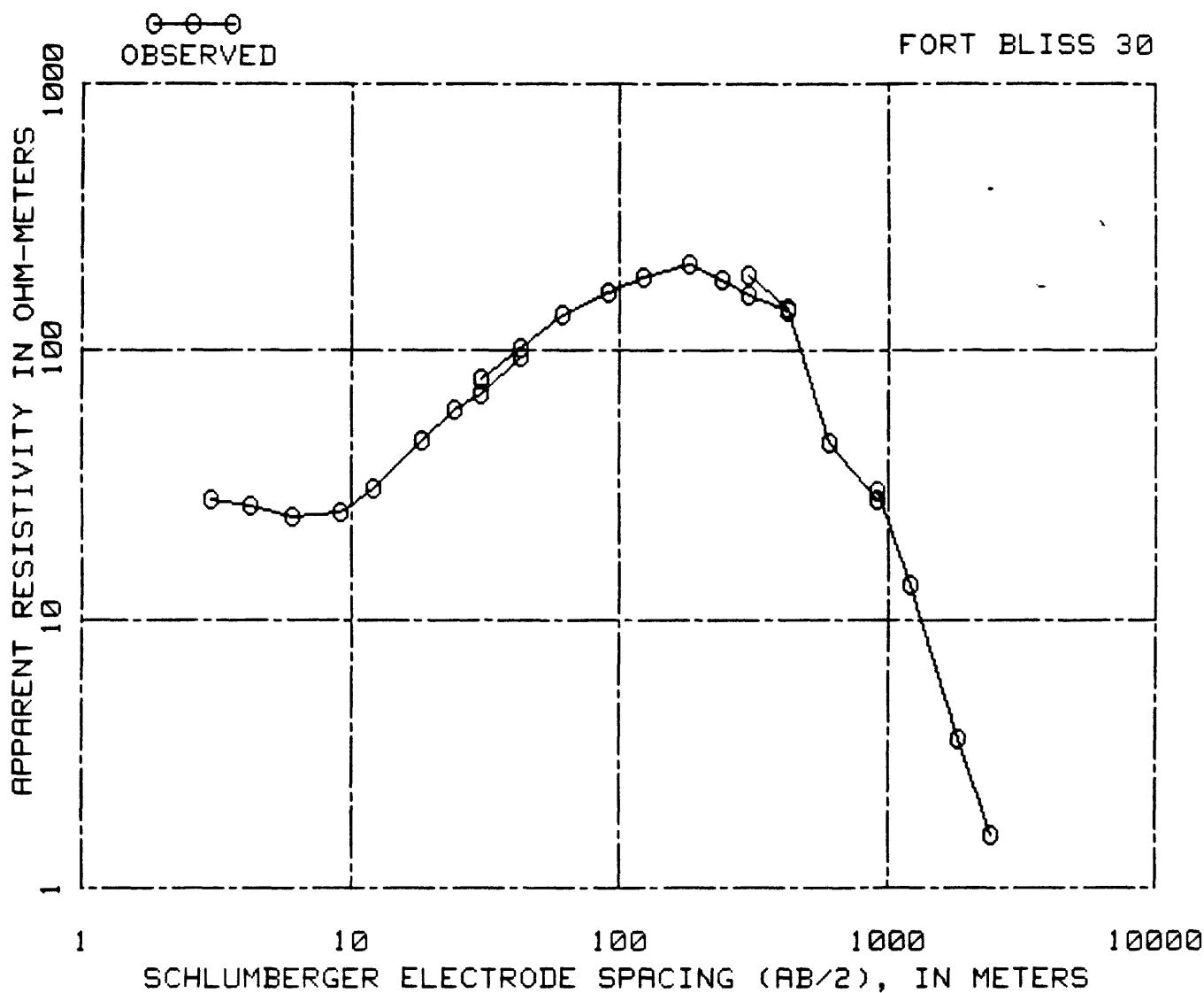
INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.27	19.65	20.71	194.39
.39	19.82	25.10	453.17
.58	19.73	38.80	248.51
.85	19.02	65.75	138.39
1.25	19.18	104.17	78.88
1.81	26.34	159.82	60.97
2.48	50.37	244.86	72.12
3.55	54.53	368.79	60.87
5.39	34.78	517.76	20.90
8.09	30.32	692.56	7.26
11.81	50.57	997.71	5.61
16.02	100.90	1000996.71	1.00



AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
3.05	38.00	182.88	155.00
4.27	43.00	243.84	122.00
6.10	51.30	304.80	96.00
9.14	64.00	426.72	66.00
12.19	76.00	304.80	115.00
18.29	102.00	426.72	72.00
24.38	126.00	609.60	48.60
30.48	146.00	914.40	24.50
30.48	143.00	1219.20	16.00
42.67	164.00	914.40	29.00
60.96	190.00	1219.20	15.00
91.44	180.00	1828.80	5.90
121.92	166.00	2438.40	5.00
		3048.00	6.00



INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.23	32.06	16.80	313.60
.34	32.15	25.61	304.68
.49	32.11	40.61	254.88
.72	31.83	63.64	190.90
1.06	31.54	96.99	142.45
1.56	32.75	144.92	106.48
2.28	38.47	212.42	69.56
3.29	51.52	308.16	45.51
4.65	73.77	453.48	38.14
6.43	113.06	651.00	21.13
8.68	183.74	796.94	2.95
11.77	268.41	975.04	.82
		10000974.04	11.20

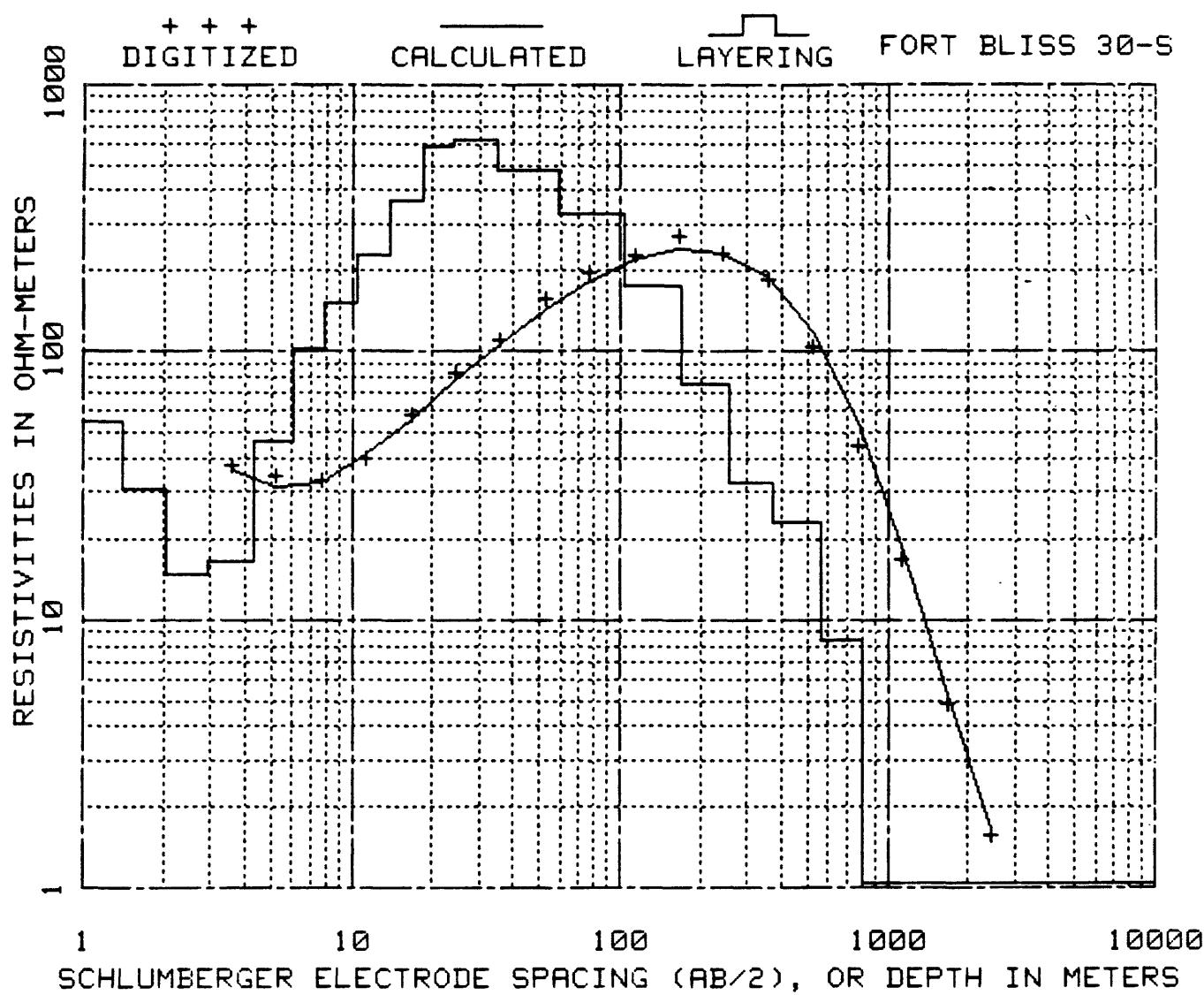


AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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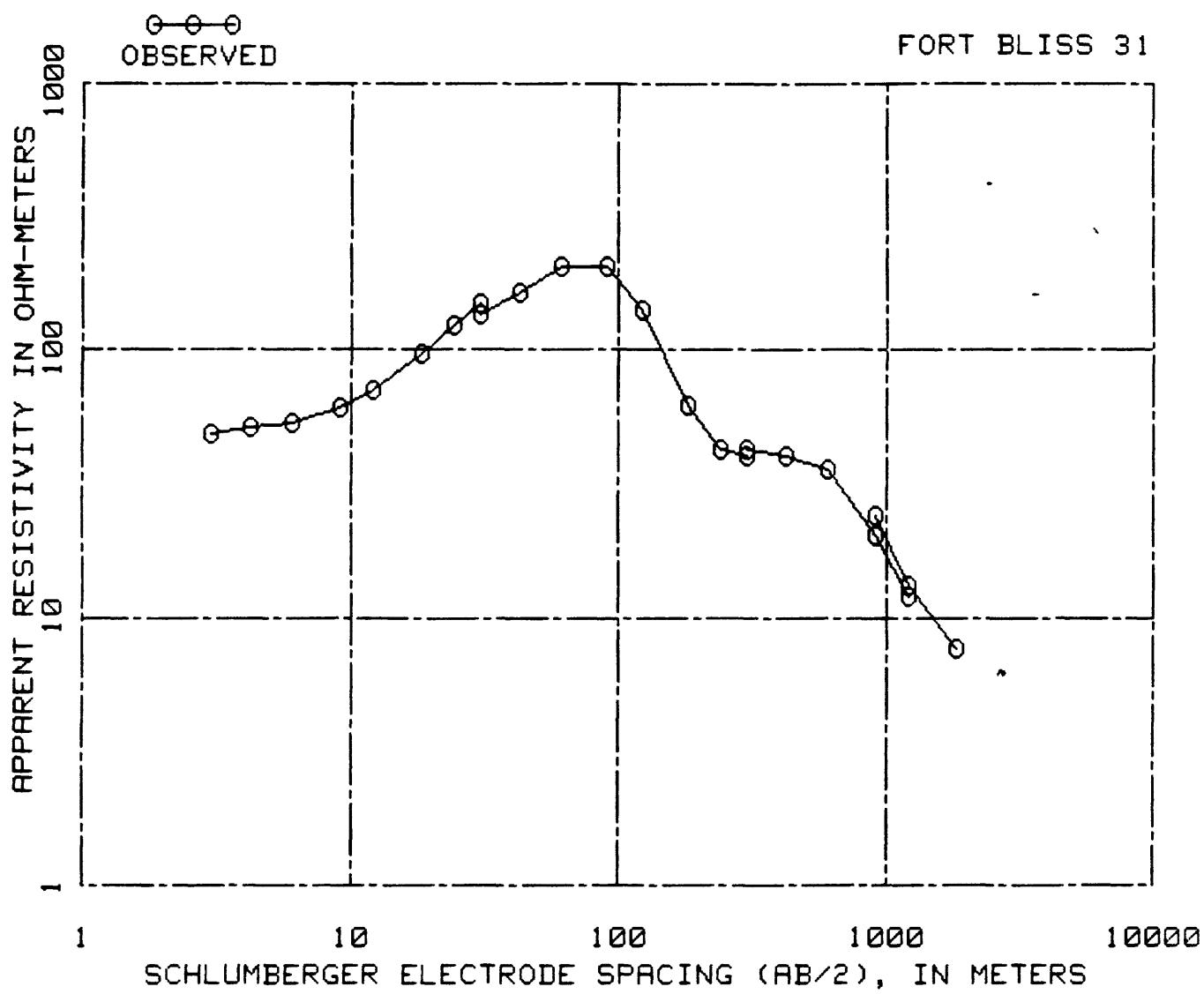
3.05	28.20
4.27	26.60
6.10	24.00
9.14	25.20
12.19	31.00
18.29	46.40
24.38	60.00
30.48	69.00
42.67	95.00
30.48	78.00
42.67	102.00
60.96	137.00
91.44	163.00

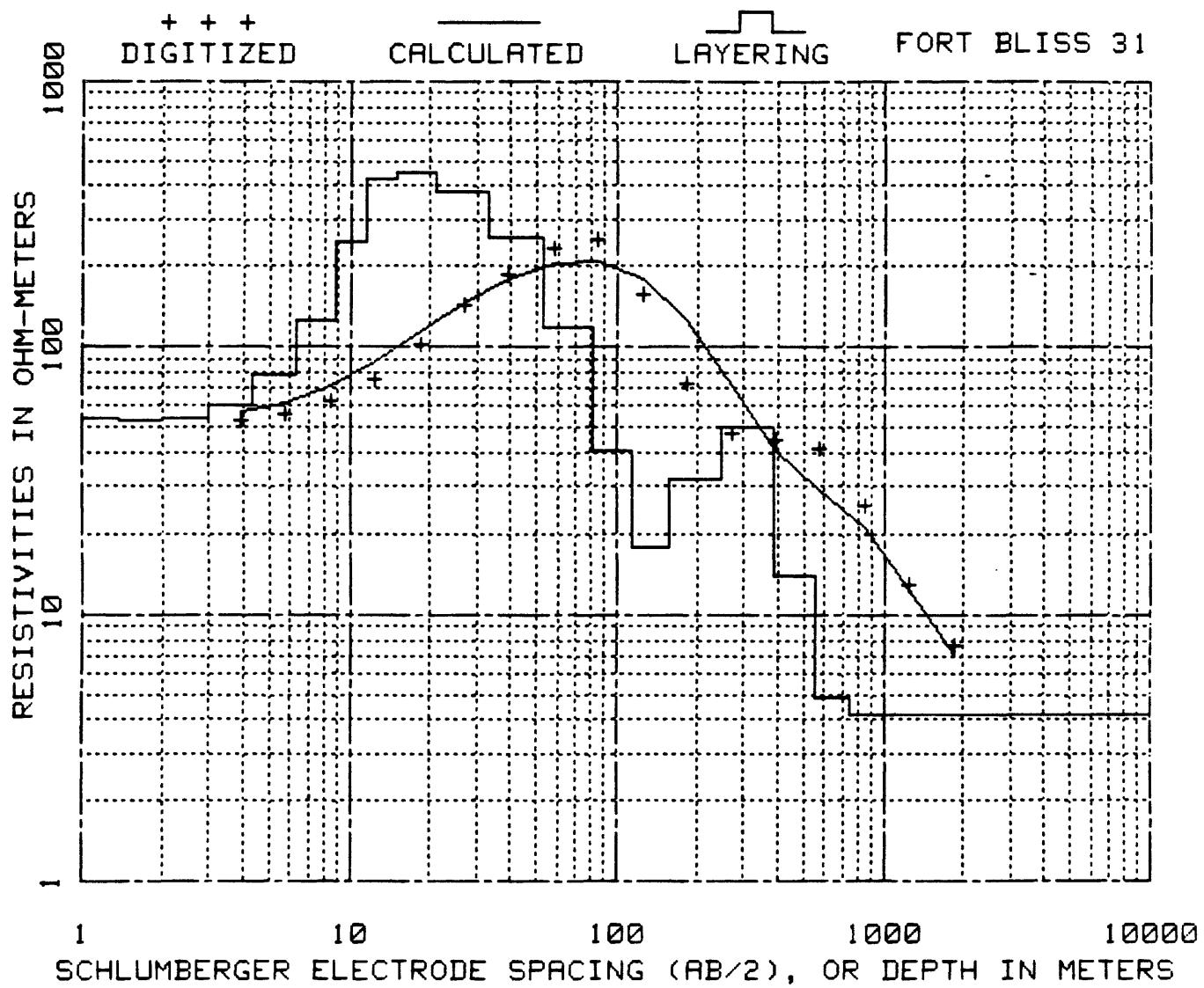
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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121.92	187.00
182.88	210.00
243.84	182.00
304.80	161.00
426.72	140.00
304.80	191.00
426.72	144.00
609.60	46.00
914.40	28.00
914.40	30.00
1219.20	13.50
1828.80	3.60
2438.40	1.58



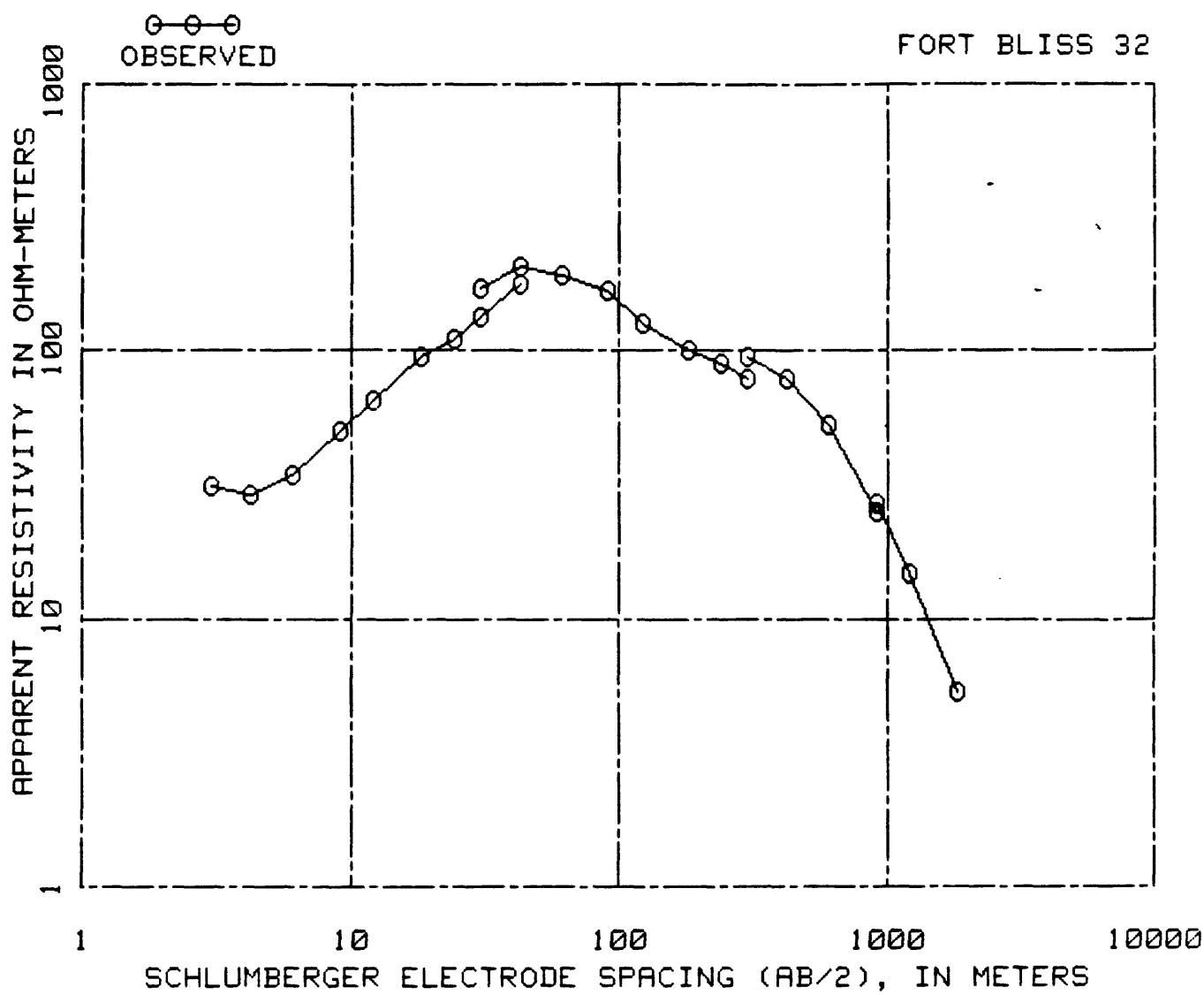
INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.21	55.64	13.85	229.55
.30	54.57	18.30	368.57
.44	53.24	24.11	592.95
.65	54.80	35.08	624.28
.96	60.26	59.16	481.38
1.41	55.17	103.18	329.48
2.04	30.58	167.82	175.06
2.92	14.76	255.13	75.34
4.31	16.49	374.38	32.75
6.08	46.69	560.04	23.11
7.92	101.71	804.50	8.42
10.44	151.02	1000803.50	1.04

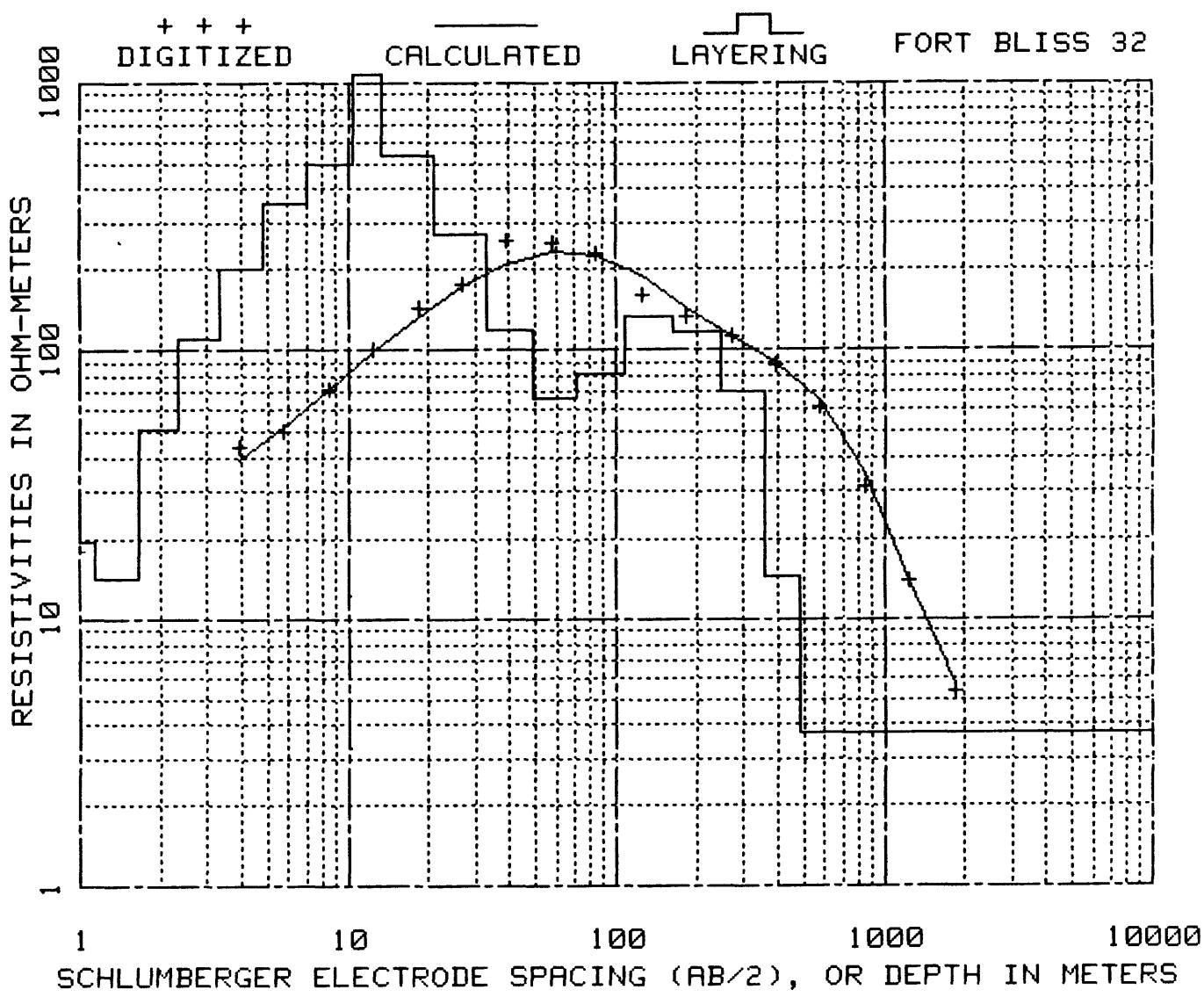




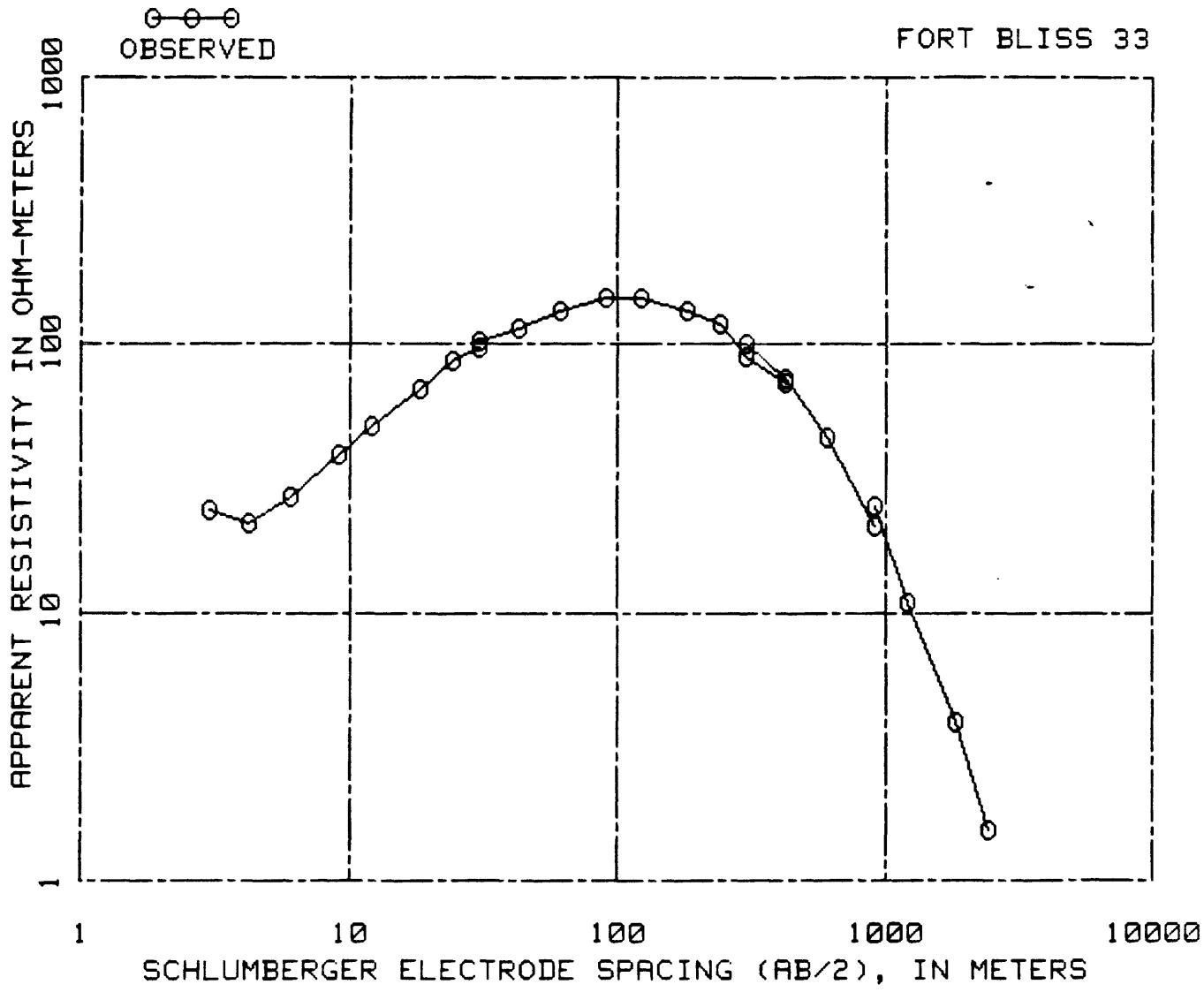
INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
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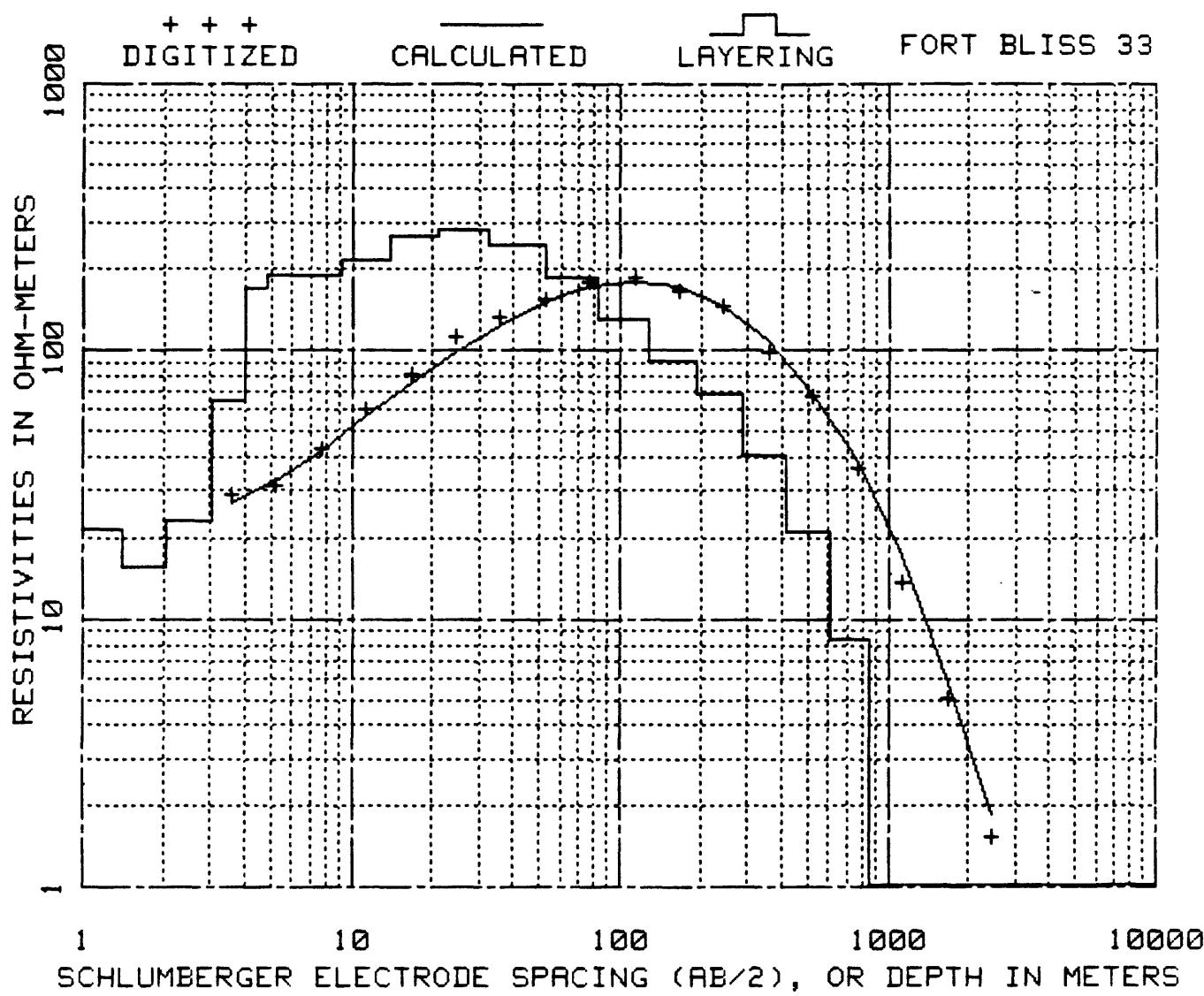
.30	53.47	15.00	426.80
.43	53.43	21.11	451.19
.64	53.47	32.87	380.27
.93	53.56	53.10	255.40
1.37	53.53	81.00	119.54
2.01	53.21	113.38	40.75
2.95	54.06	156.27	17.86
4.33	60.08	246.84	32.04
6.28	78.59	384.67	49.75
8.80	125.93	551.96	13.92
11.60	245.81	748.11	4.86
		1000747.11	4.21



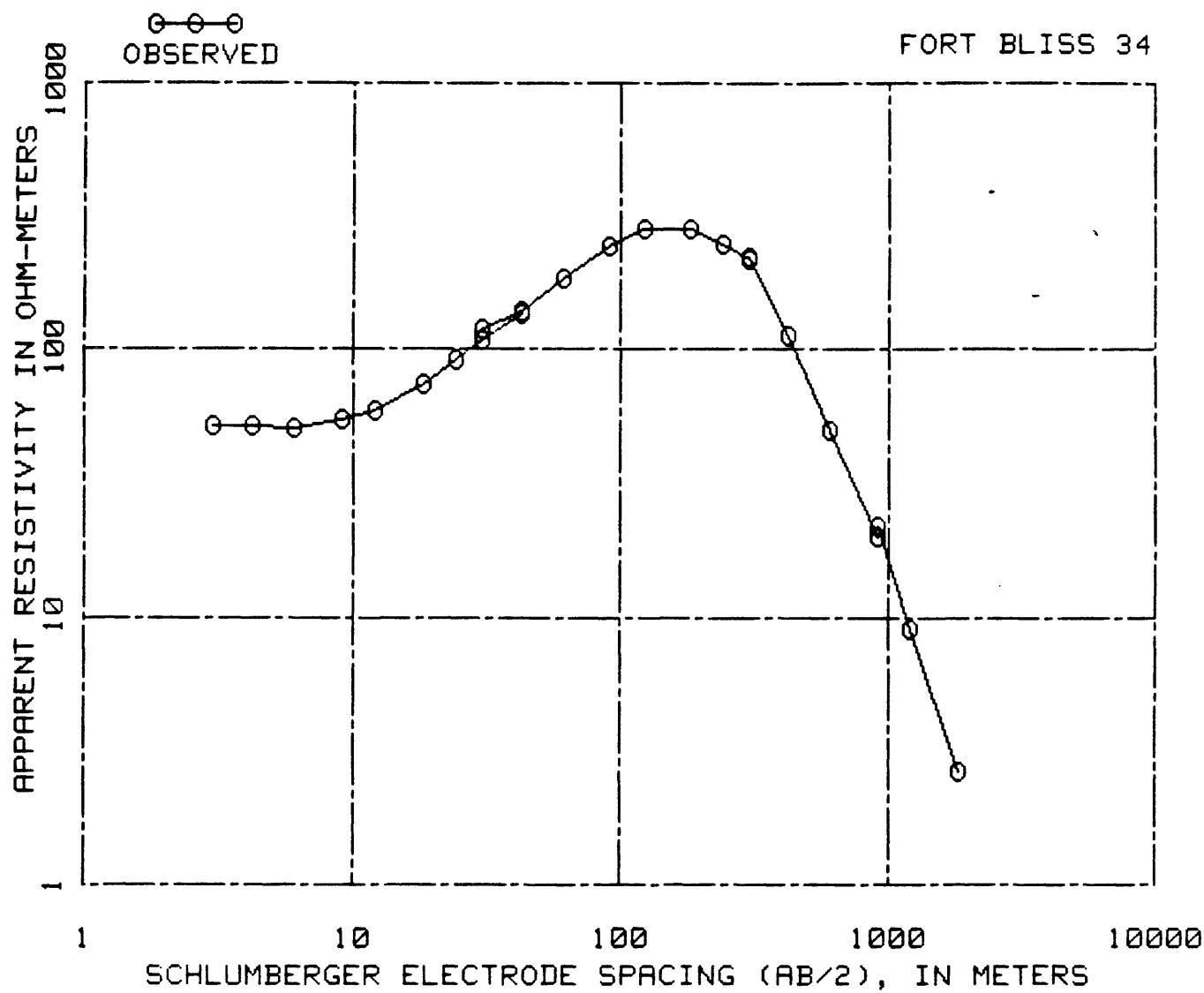


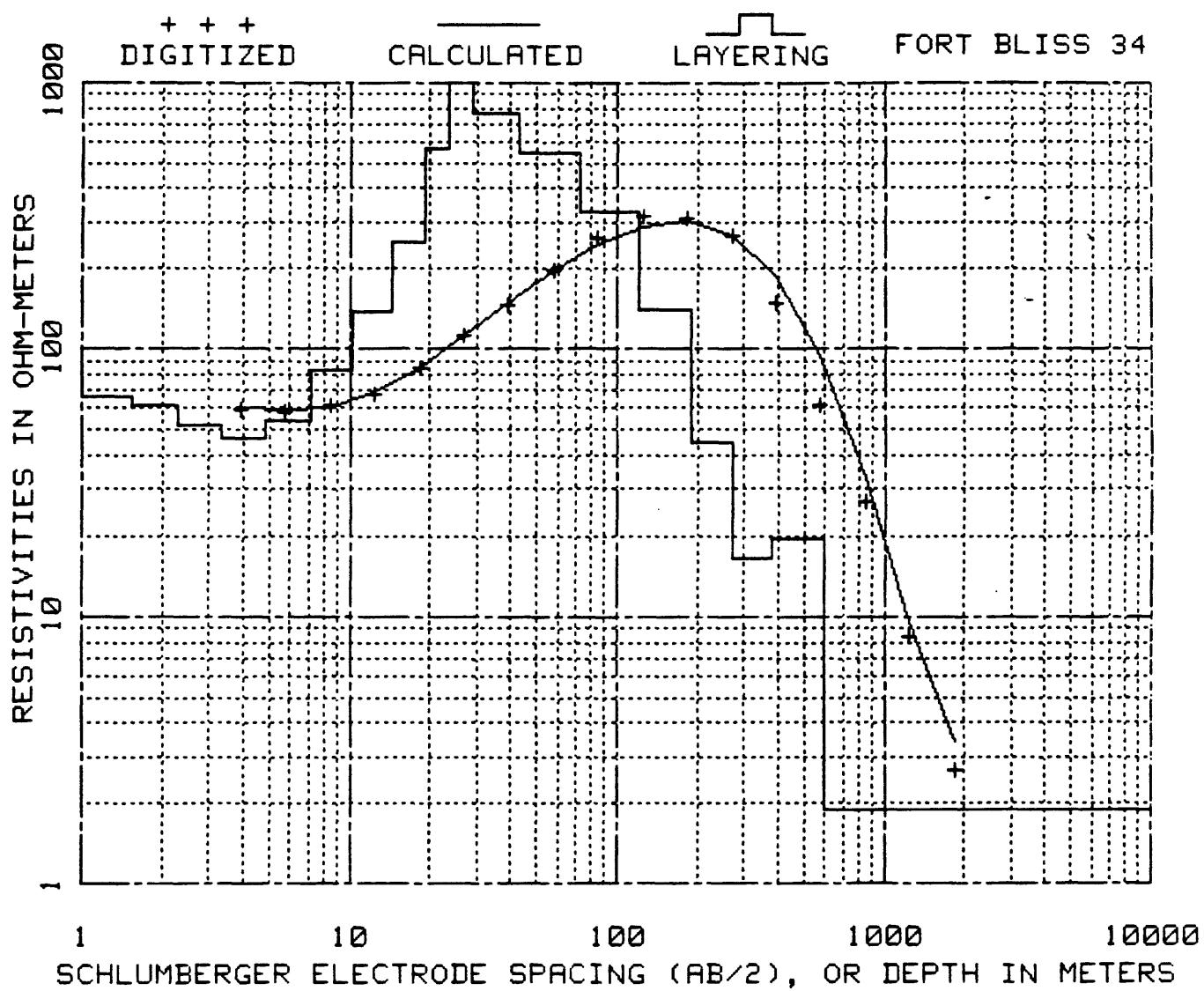
INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.17	37.16	10.47	494.95
.26	26.24	13.34	1068.05
.38	29.90	20.99	536.42
.54	51.21	32.84	271.20
.79	51.39	48.72	119.90
1.15	19.65	71.18	66.15
1.67	14.09	108.09	81.24
2.34	51.37	163.39	133.77
3.36	111.15	245.17	116.19
4.89	201.24	361.99	69.94
7.07	352.91	489.34	14.39
		1000488.34	3.72



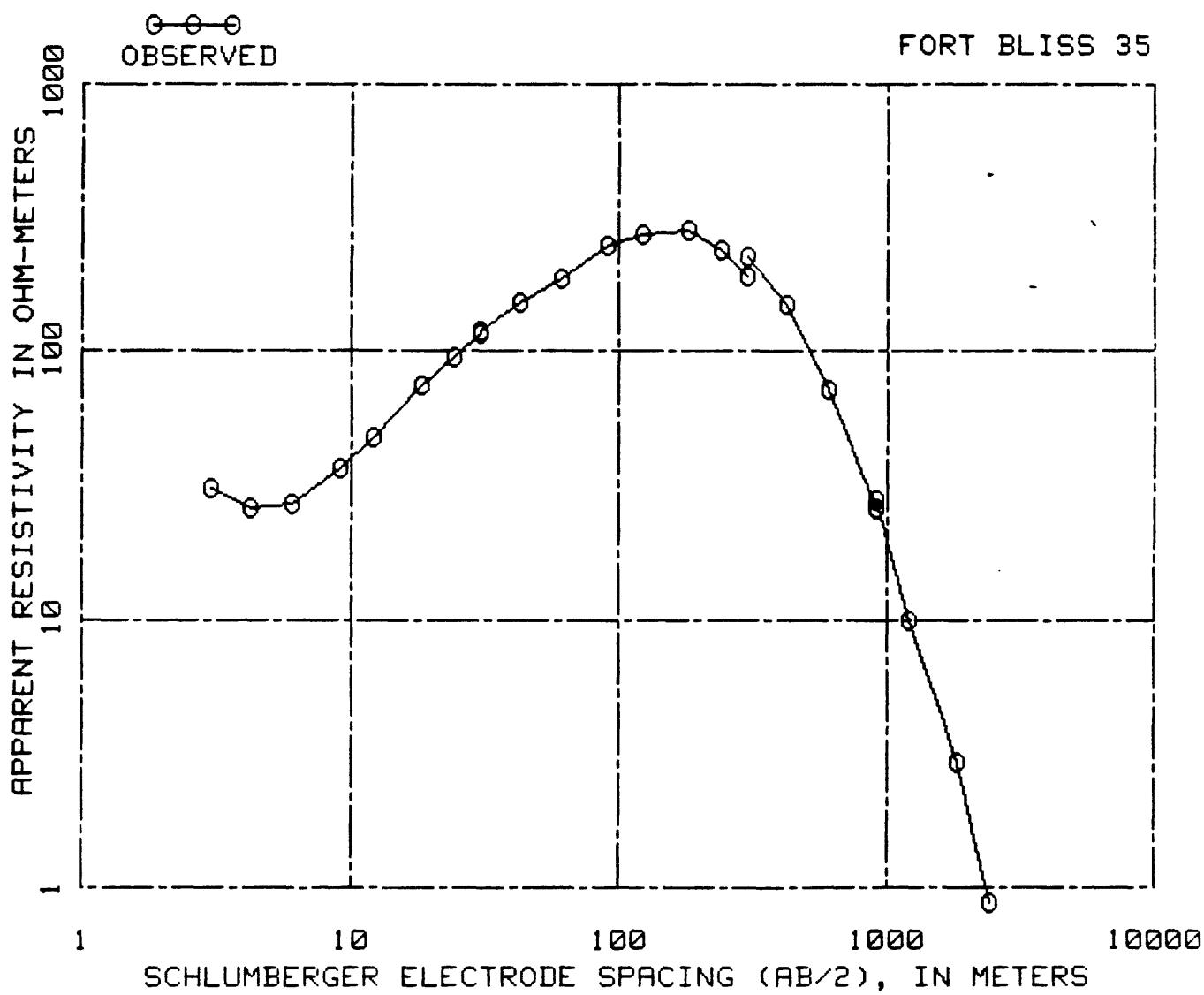


INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.21	27.47	13.87	216.91
.30	26.52	20.99	267.62
.44	27.46	32.66	284.93
.65	30.15	52.37	245.91
.96	30.11	82.92	186.65
1.40	21.61	127.29	130.01
2.05	15.53	191.31	91.60
3.01	23.00	284.58	68.60
3.98	64.79	416.91	40.45
4.82	169.03	602.42	21.09
6.33	188.68	852.04	8.41
9.19	188.85	1000851.04	1.03





INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.23	62.84	14.33	137.97
.33	62.26	18.99	251.34
.49	62.37	23.50	568.35
.72	63.70	28.95	1000.49
1.05	66.05	42.62	758.70
1.55	66.77	72.03	542.88
2.27	61.37	121.36	326.49
3.33	51.86	188.78	141.54
4.88	46.61	270.96	44.57
7.17	54.05	381.75	16.62
10.34	82.82	591.40	19.50
		1000590.40	1.90

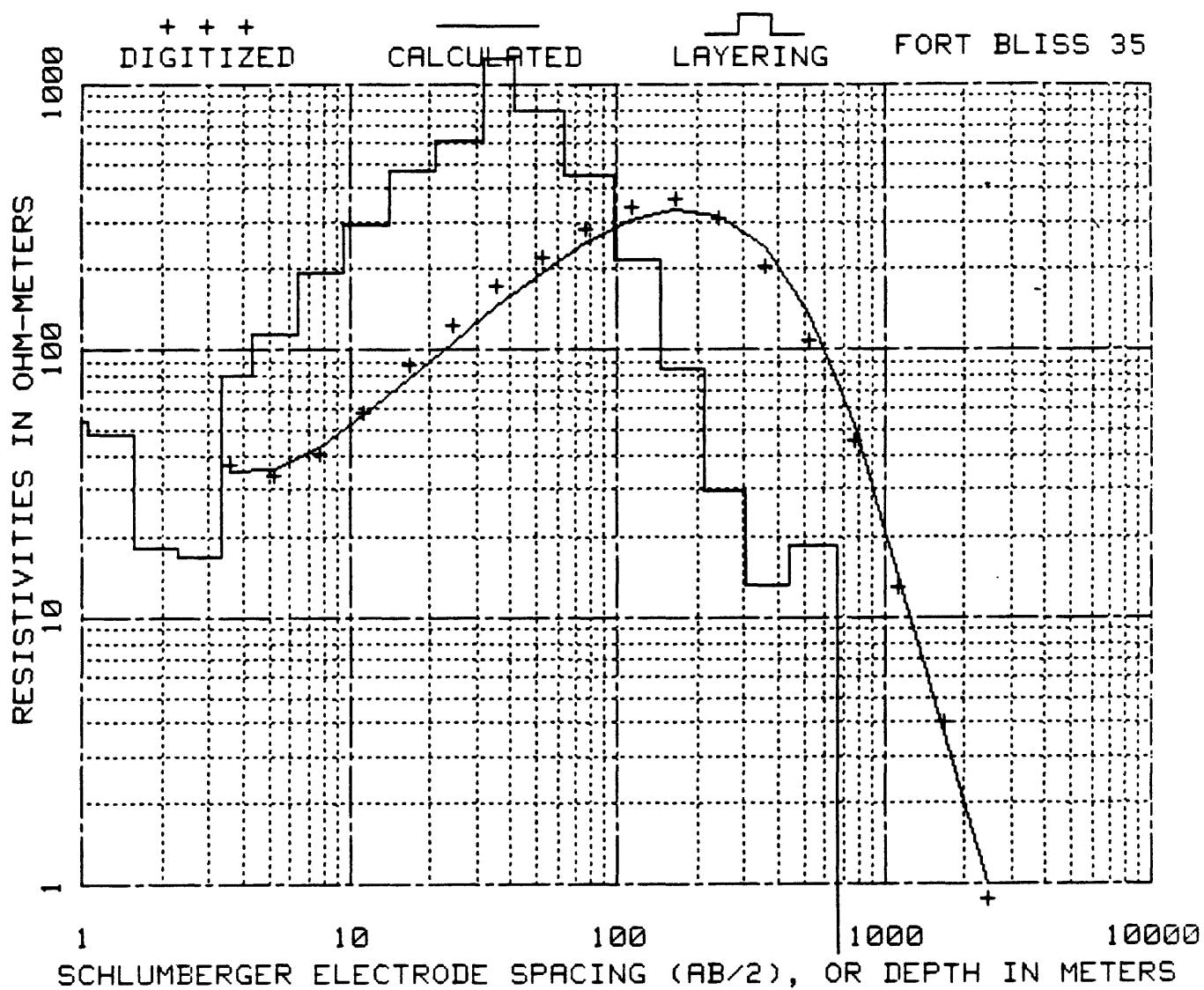


AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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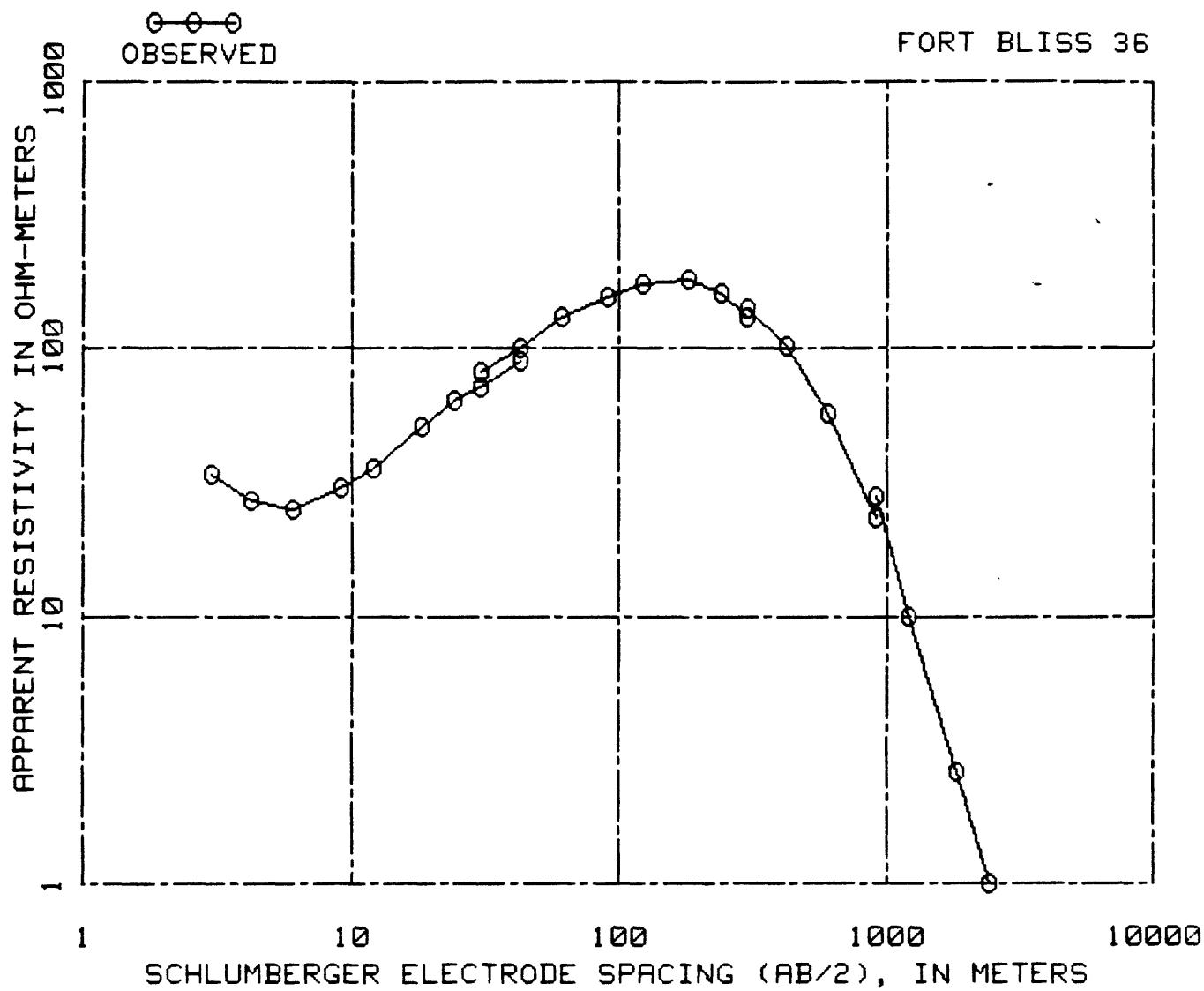
3.05	31.00
4.27	26.00
6.10	26.80
9.14	36.30
12.19	47.60
18.29	74.00
24.38	95.00
30.48	116.00
30.48	118.00
42.67	152.00
60.96	188.00
91.44	246.00

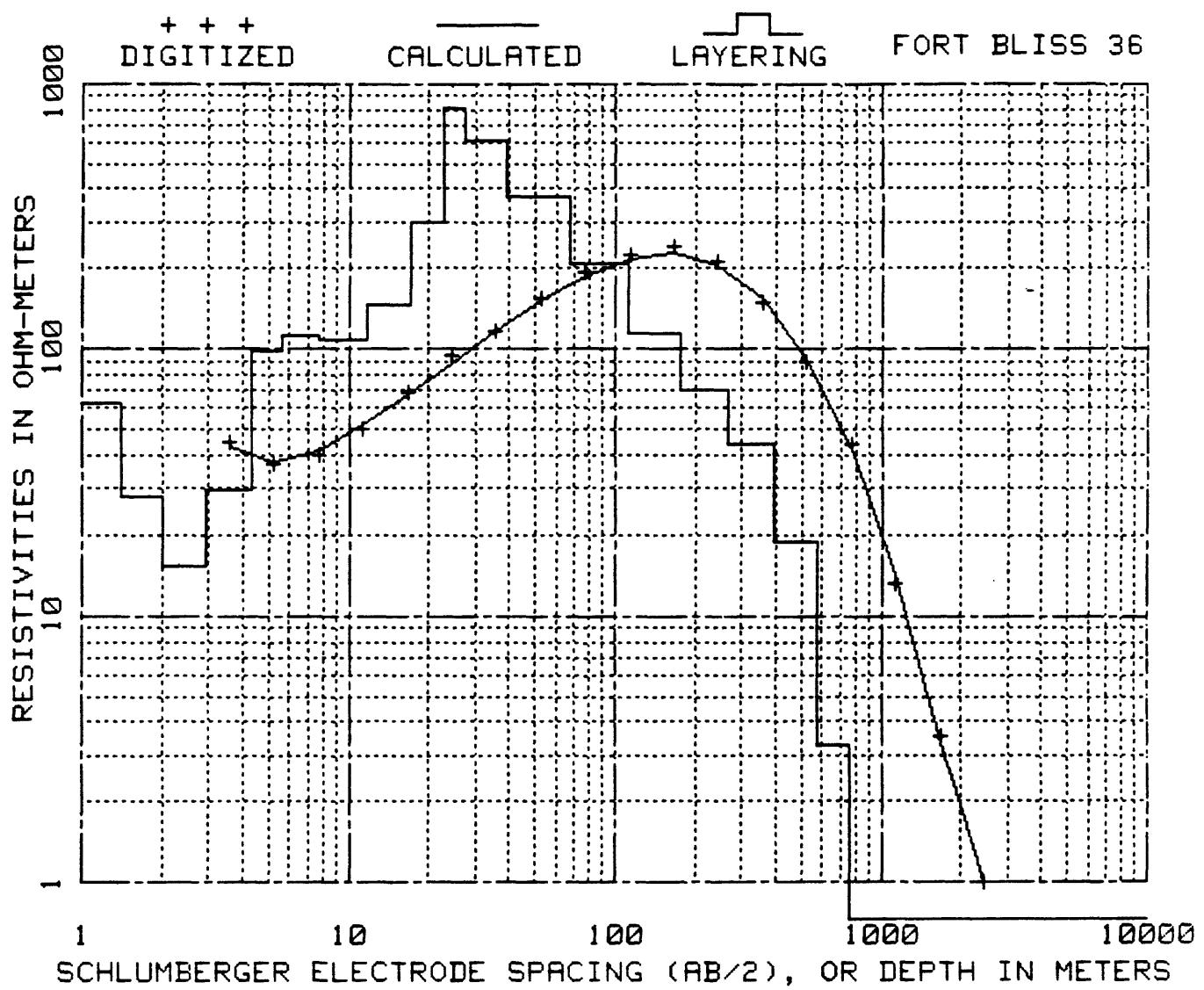
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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121.92	272.00
182.88	280.00
243.84	240.00
304.80	190.00
304.80	227.00
426.72	150.00
609.60	72.00
914.40	26.00
914.40	28.00
1219.20	10.00
1828.80	2.96
2438.40	.88

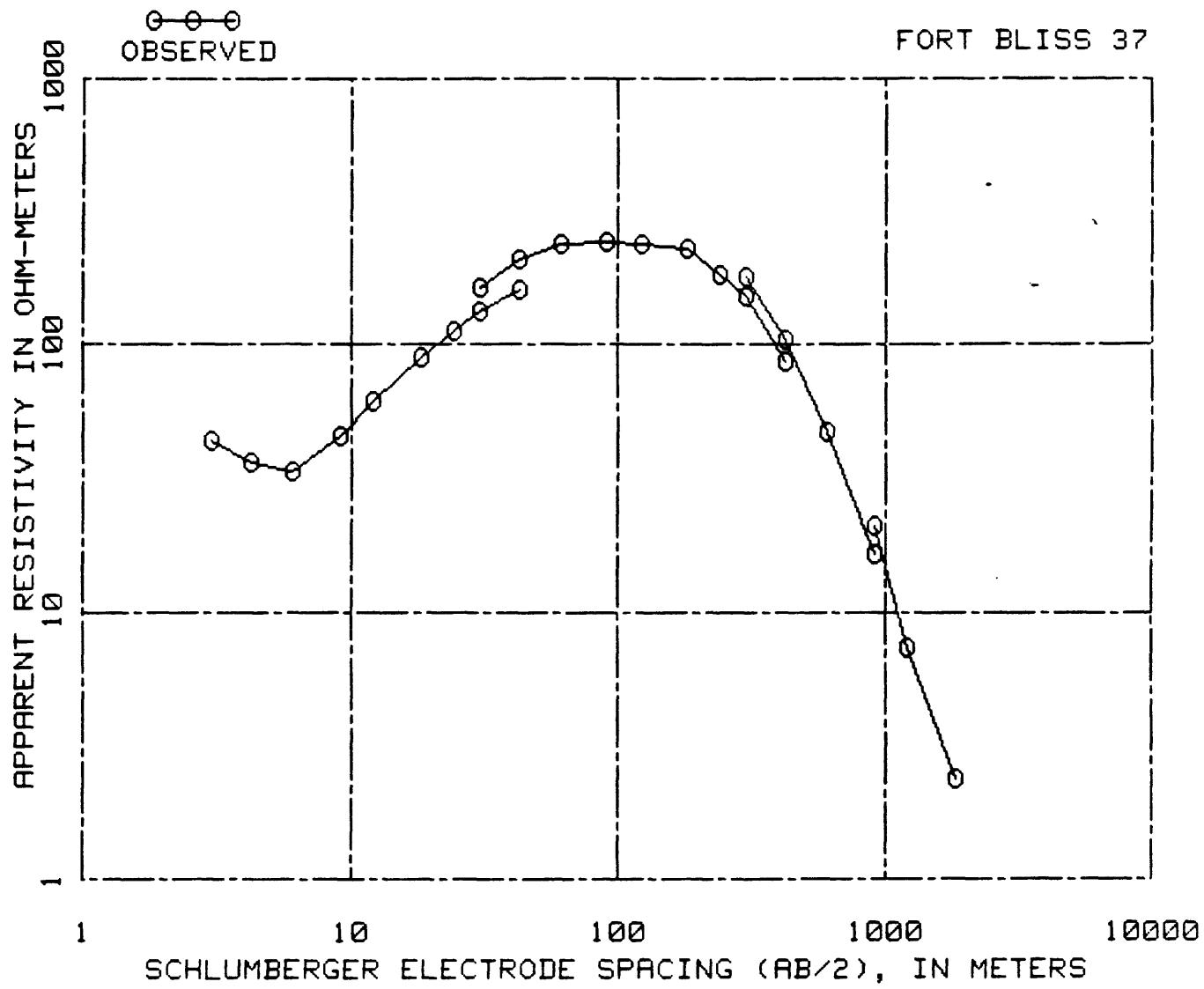


INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.16	36.80	14.27	293.66
.23	46.69	20.98	472.15
.34	45.15	31.87	615.33
.50	32.17	41.57	1256.18
.73	30.99	63.27	790.82
1.06	54.17	97.63	451.79
1.56	48.26	146.08	215.13
2.27	18.04	212.53	85.42
3.34	16.96	303.73	29.65
4.35	80.93	439.34	13.22
6.45	115.38	669.25	18.49
9.52	194.74	1000668.25	.51





INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.21	70.98	16.95	145.93
.30	69.31	22.61	300.53
.44	67.80	27.23	817.04
.65	71.89	39.20	605.71
.96	80.20	67.06	372.16
1.40	62.93	111.70	210.85
2.02	28.16	174.68	115.14
2.89	15.45	264.74	70.60
4.31	29.47	395.05	44.27
5.64	99.13	571.39	18.86
7.83	111.70	761.76	3.31
11.63	107.64	1000760.76	.73

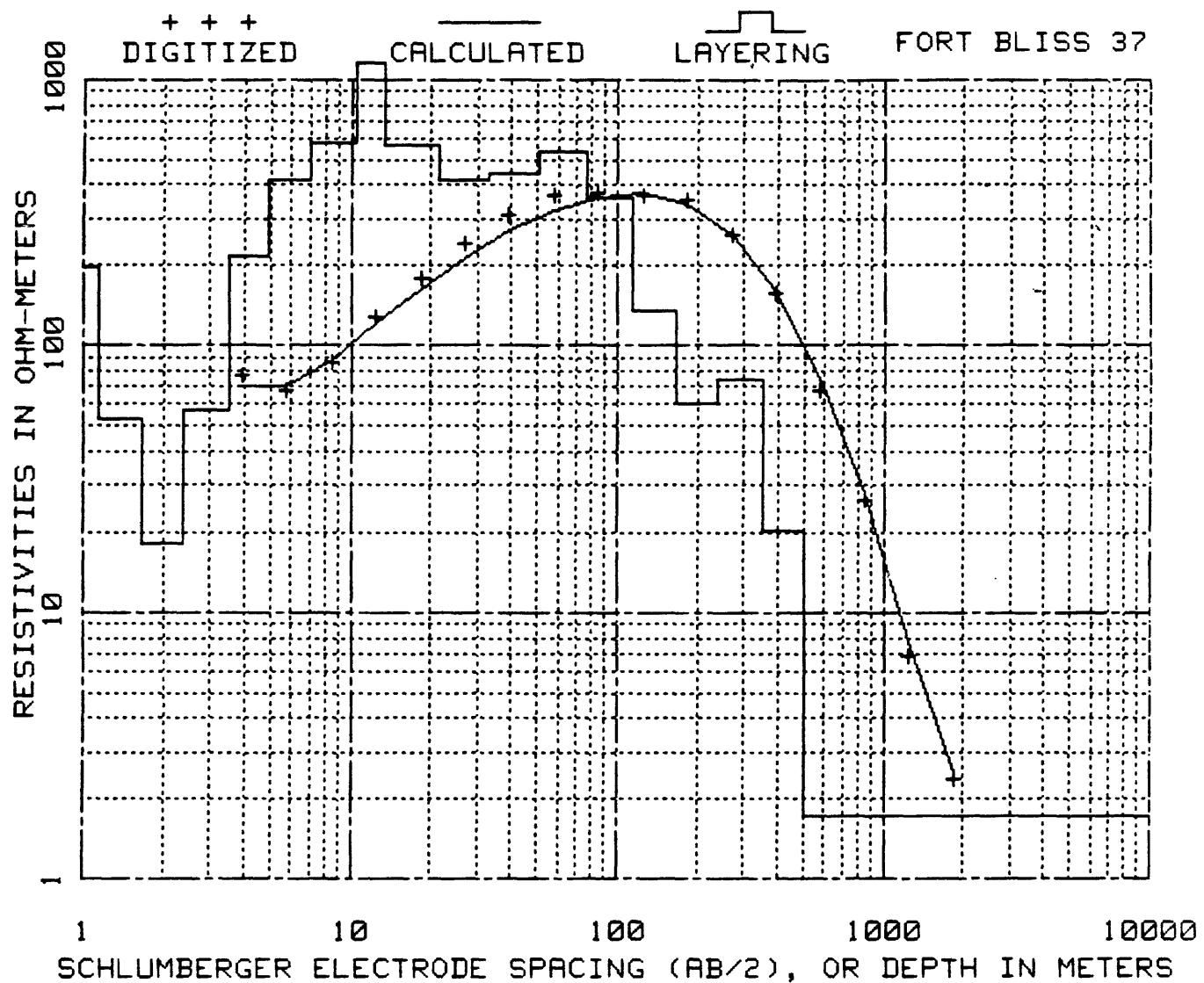


AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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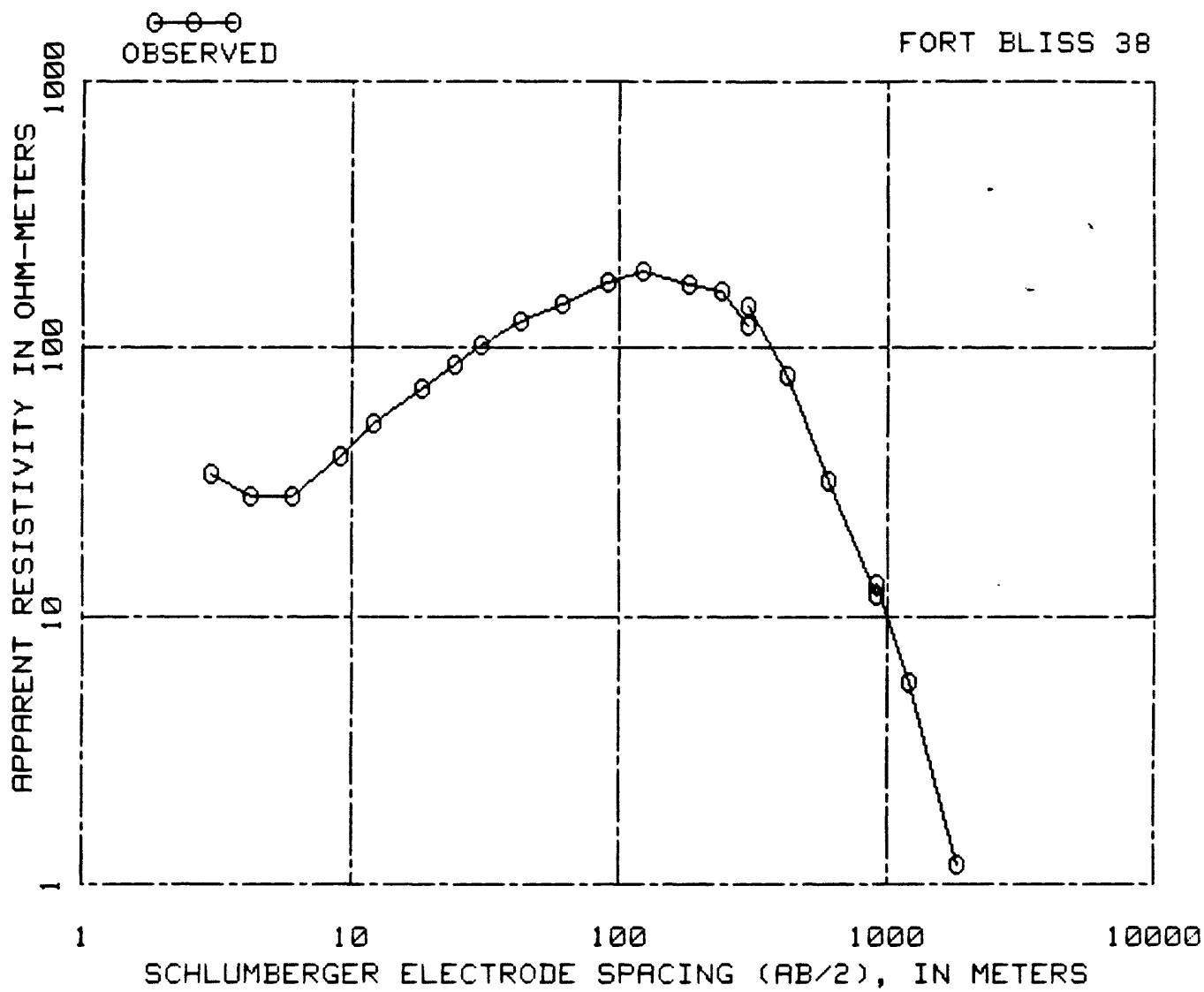
3.05	44.00
4.27	36.50
6.10	33.80
9.14	46.00
12.19	61.80
18.29	89.00
24.38	112.80
30.48	132.00
42.67	160.00
30.48	163.00
42.67	210.00
60.96	240.00

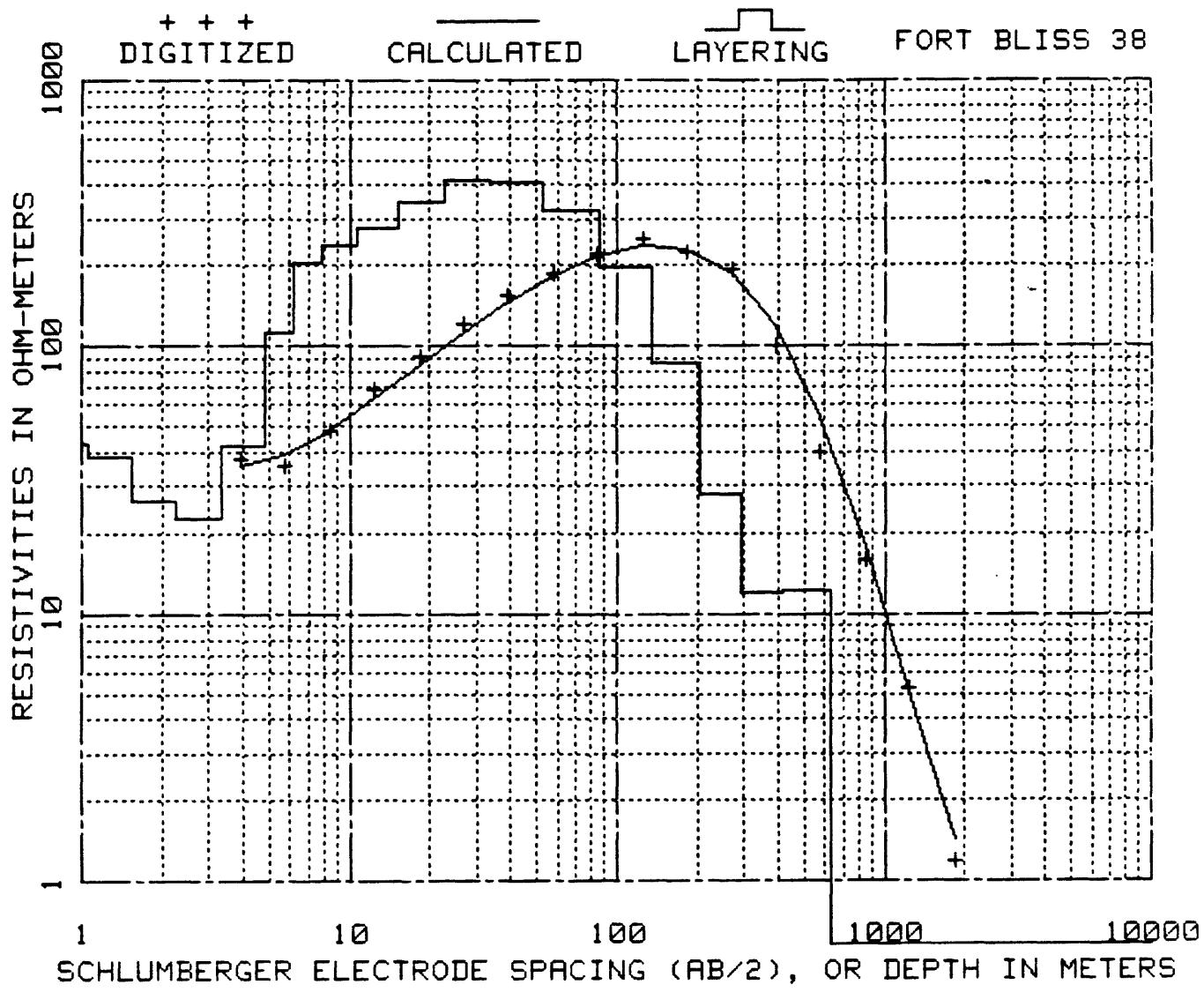
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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91.44	242.00
121.92	238.00
182.88	230.00
243.84	185.00
304.80	152.00
426.72	87.00
304.80	180.00
426.72	105.00
609.60	47.00
914.40	16.50
914.40	21.00
1219.20	7.30
1828.80	2.40

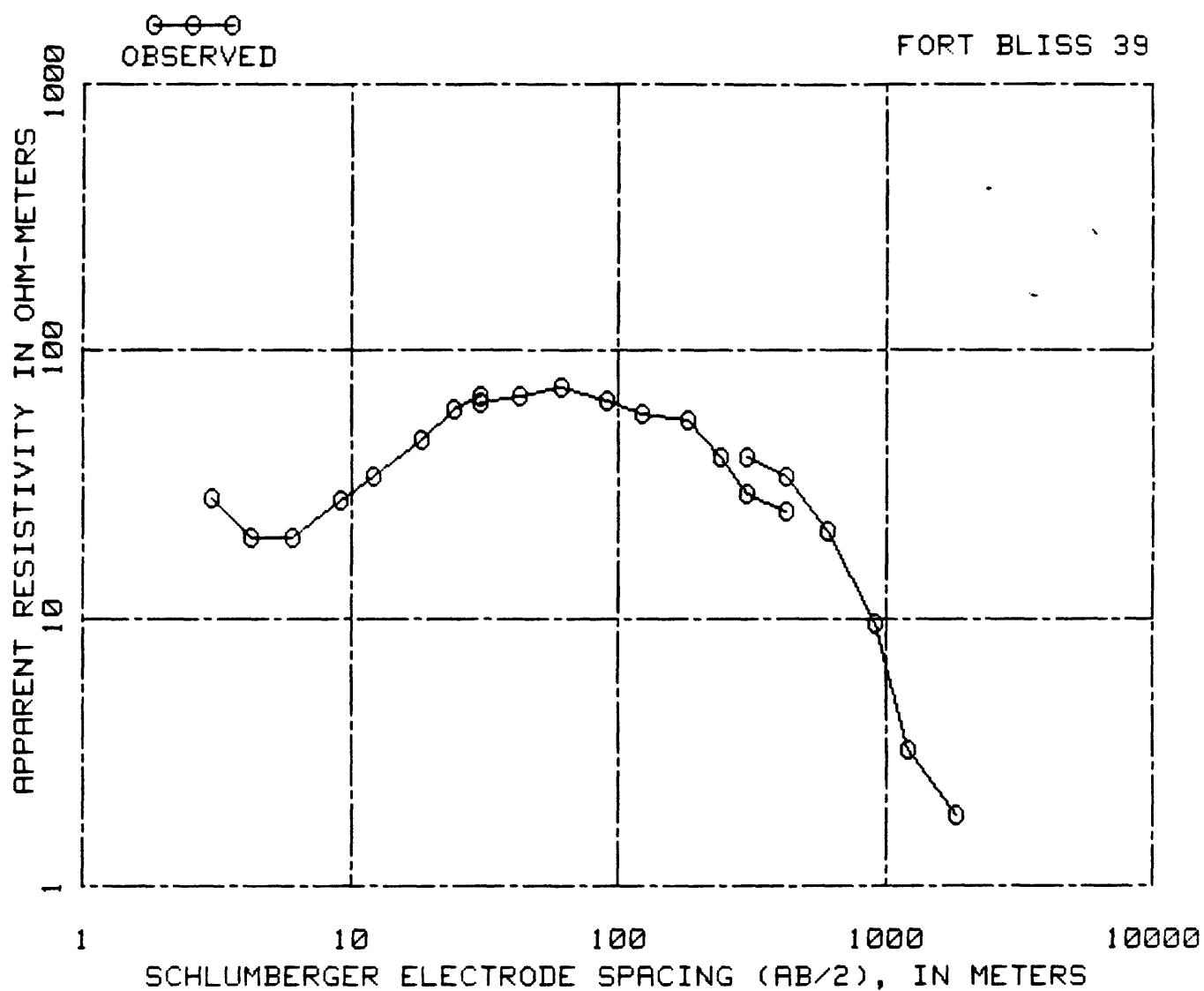


INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.17	101.85	10.49	577.69
.25	145.75	13.48	1151.21
.37	103.63	21.27	569.64
.55	75.26	33.27	421.27
.80	115.38	50.89	445.20
1.13	197.32	76.36	539.29
1.66	53.06	114.16	361.09
2.36	18.06	165.42	136.16
3.53	57.34	236.58	60.17
4.98	216.63	353.49	74.29
7.06	420.37	501.23	20.44
		1000500.23	1.74





INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.23	38.19	10.68	239.21
.33	37.23	15.33	277.42
.49	37.65	22.49	347.23
.72	40.13	33.68	419.31
1.05	43.02	52.95	410.54
1.55	38.29	85.71	325.24
2.26	26.33	134.76	197.73
3.32	22.78	202.51	87.15
4.81	42.04	290.65	28.04
6.23	112.09	418.20	11.95
7.89	204.02	633.89	12.22
		1000632.89	.58

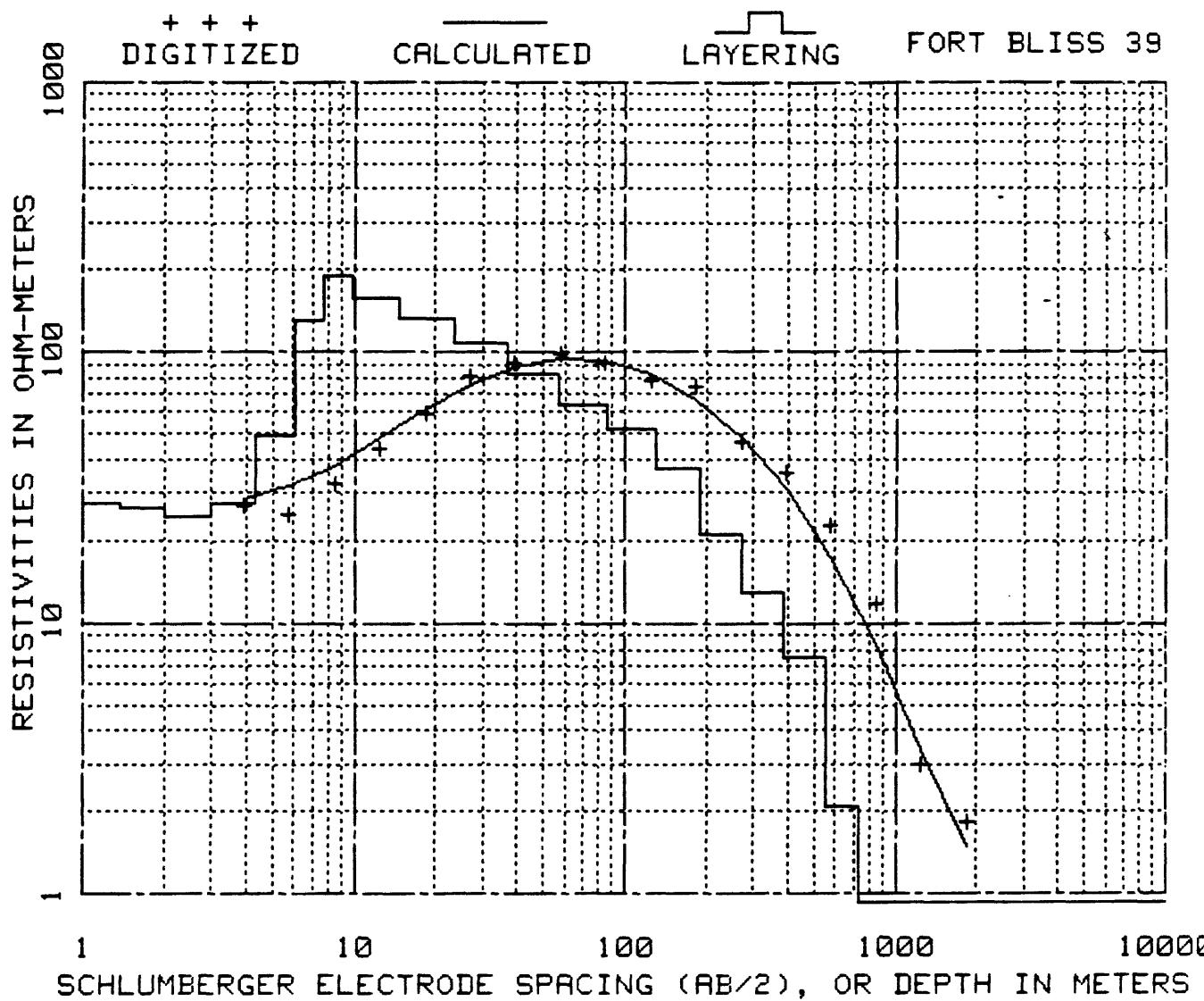


AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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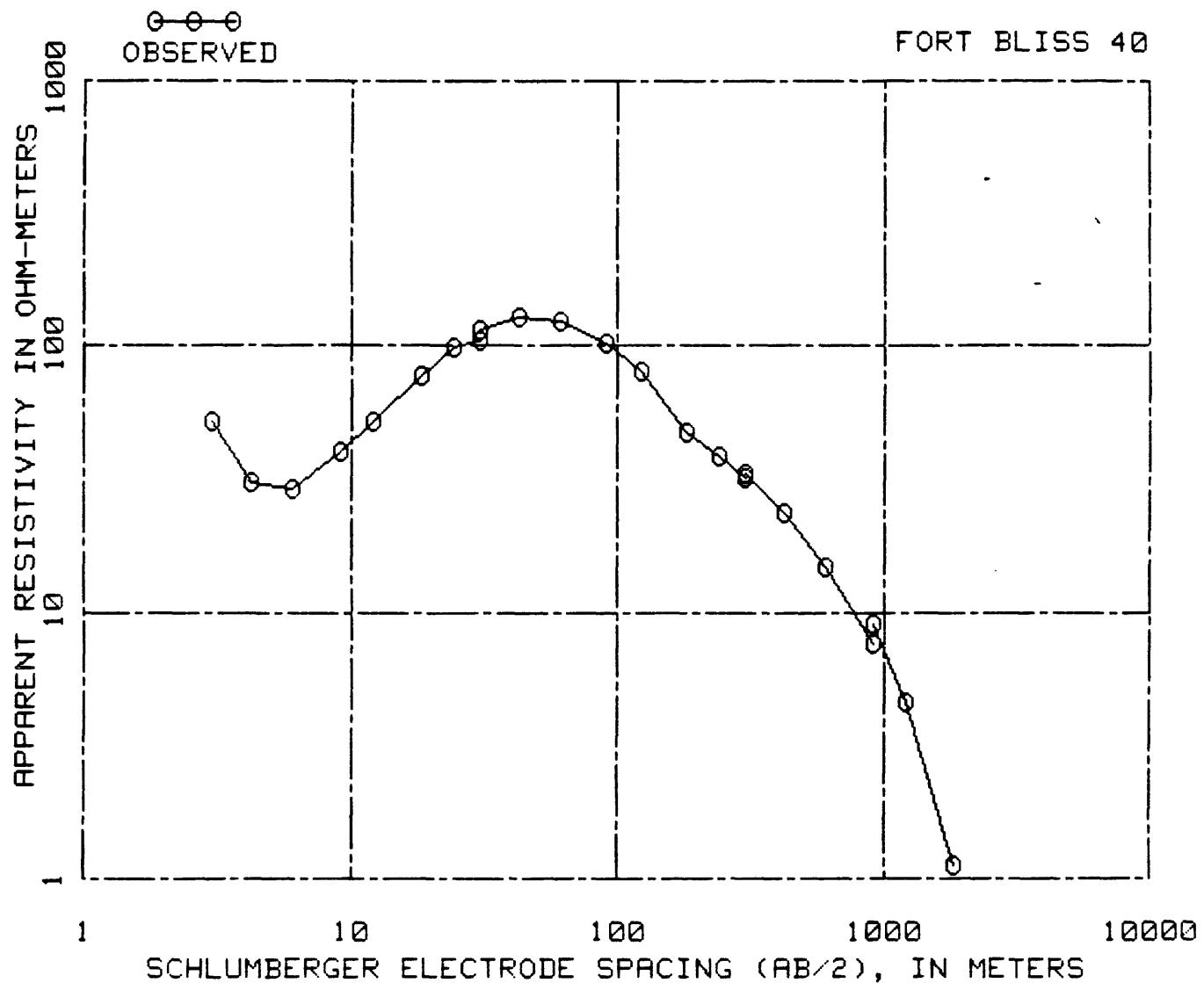
3.05	28.00
4.27	20.00
6.10	20.00
9.14	27.30
12.19	34.00
18.29	46.80
24.38	60.00
30.48	68.00
30.48	64.00
42.67	68.00
60.96	73.00
91.44	65.00

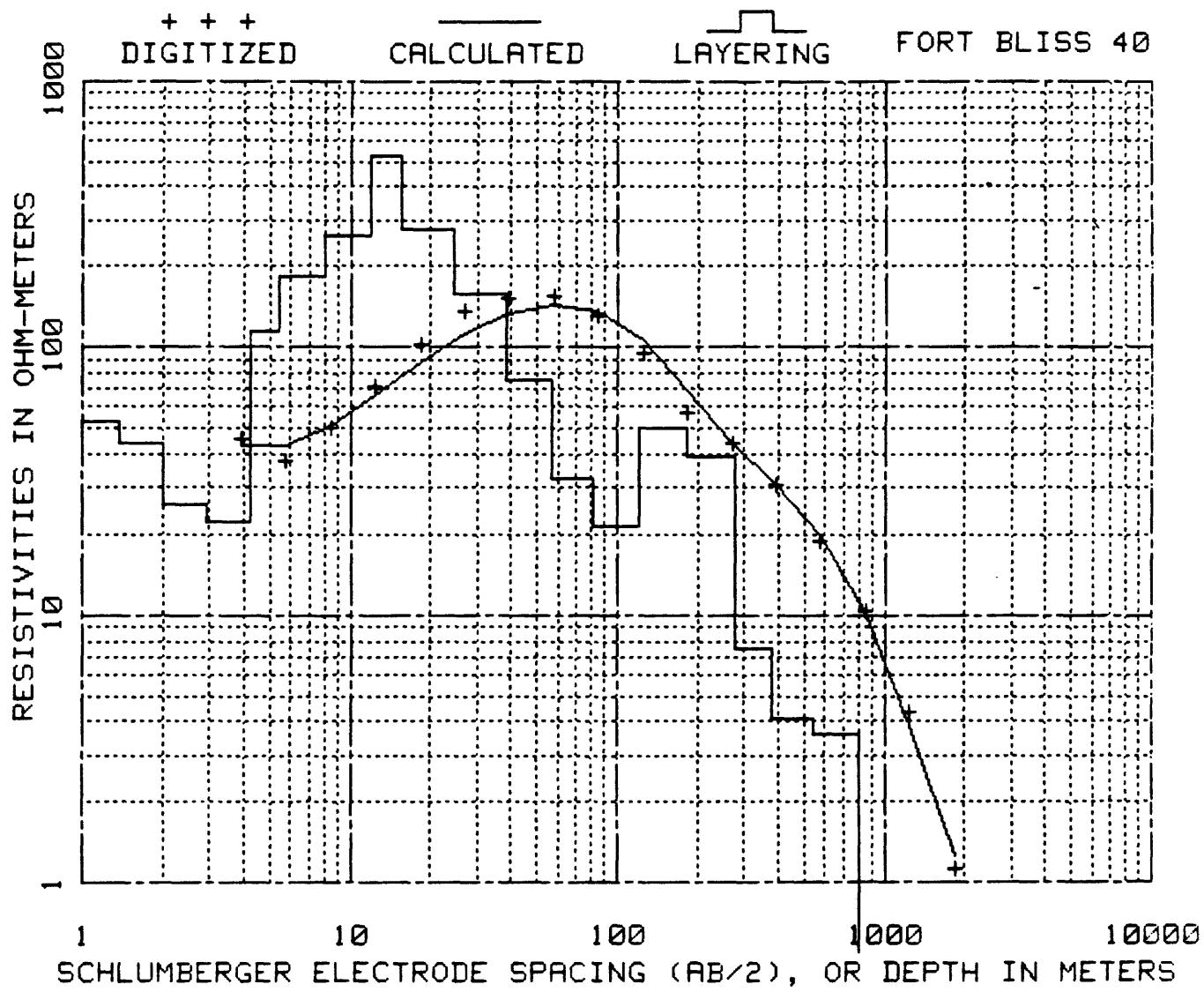
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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121.92	58.00
182.88	55.00
243.84	40.00
304.80	29.00
426.72	25.00
304.80	40.00
426.72	34.00
609.60	21.00
914.40	9.50
914.40	9.50
1219.20	3.28
1828.80	1.85

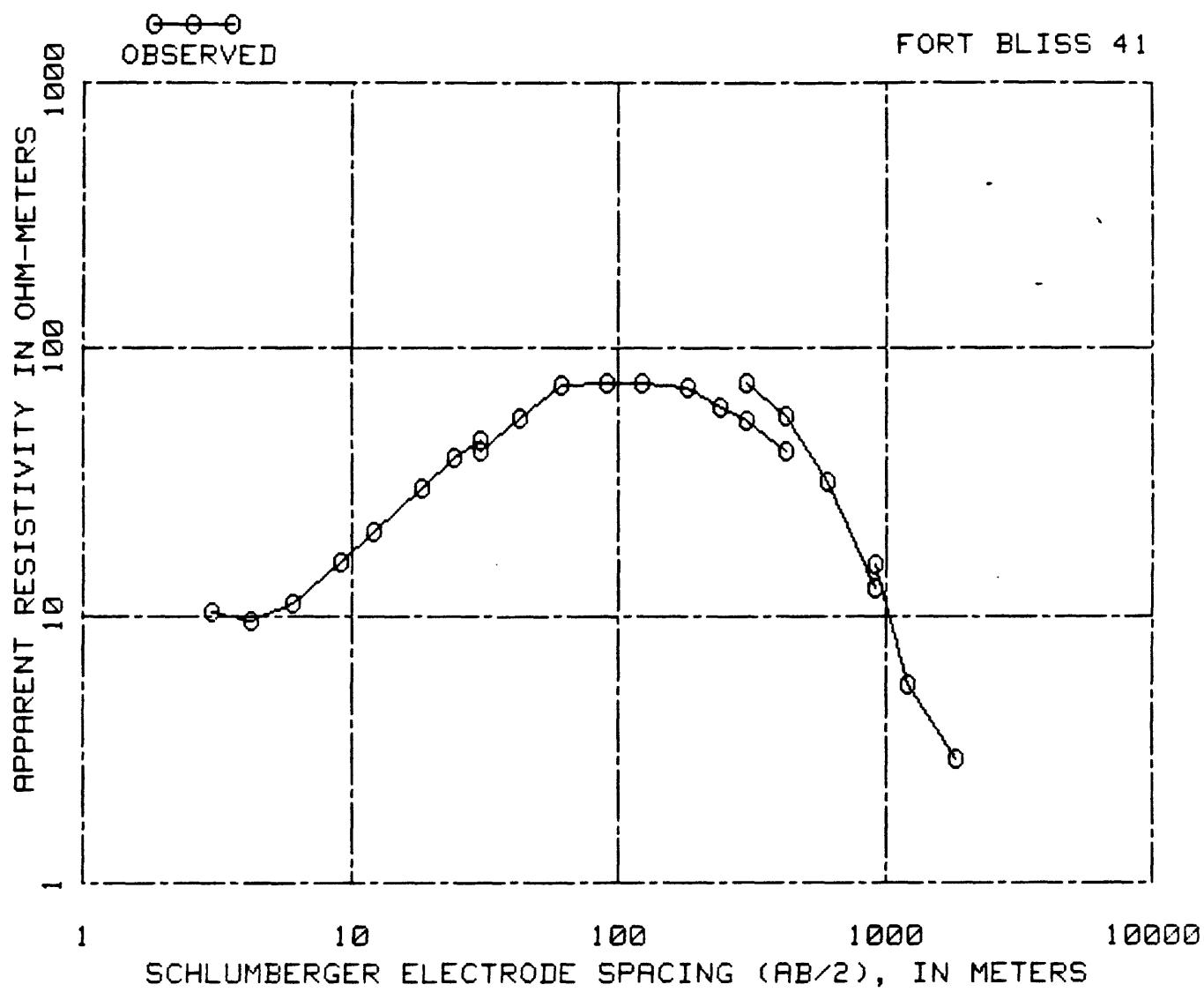


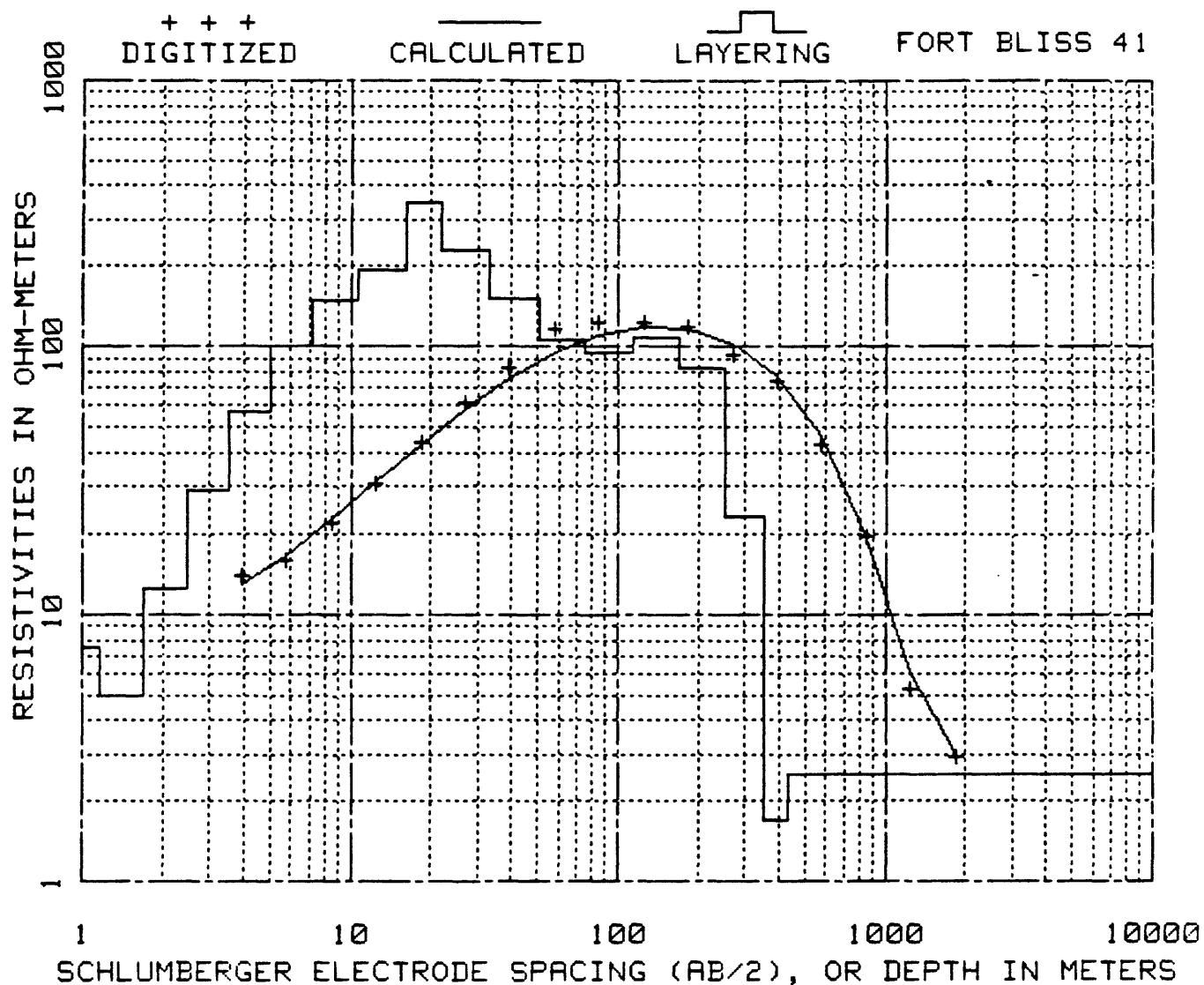
INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.30	27.11	14.75	159.19
.43	27.05	23.33	134.42
.64	27.10	37.03	109.13
.93	27.29	57.22	82.81
1.37	27.44	86.43	63.79
2.01	26.59	128.95	52.23
2.95	24.72	189.73	37.44
4.34	27.39	272.42	20.92
6.13	48.96	389.74	12.89
7.73	130.49	555.18	7.50
9.99	189.12	729.85	2.07
		1000728.85	.93





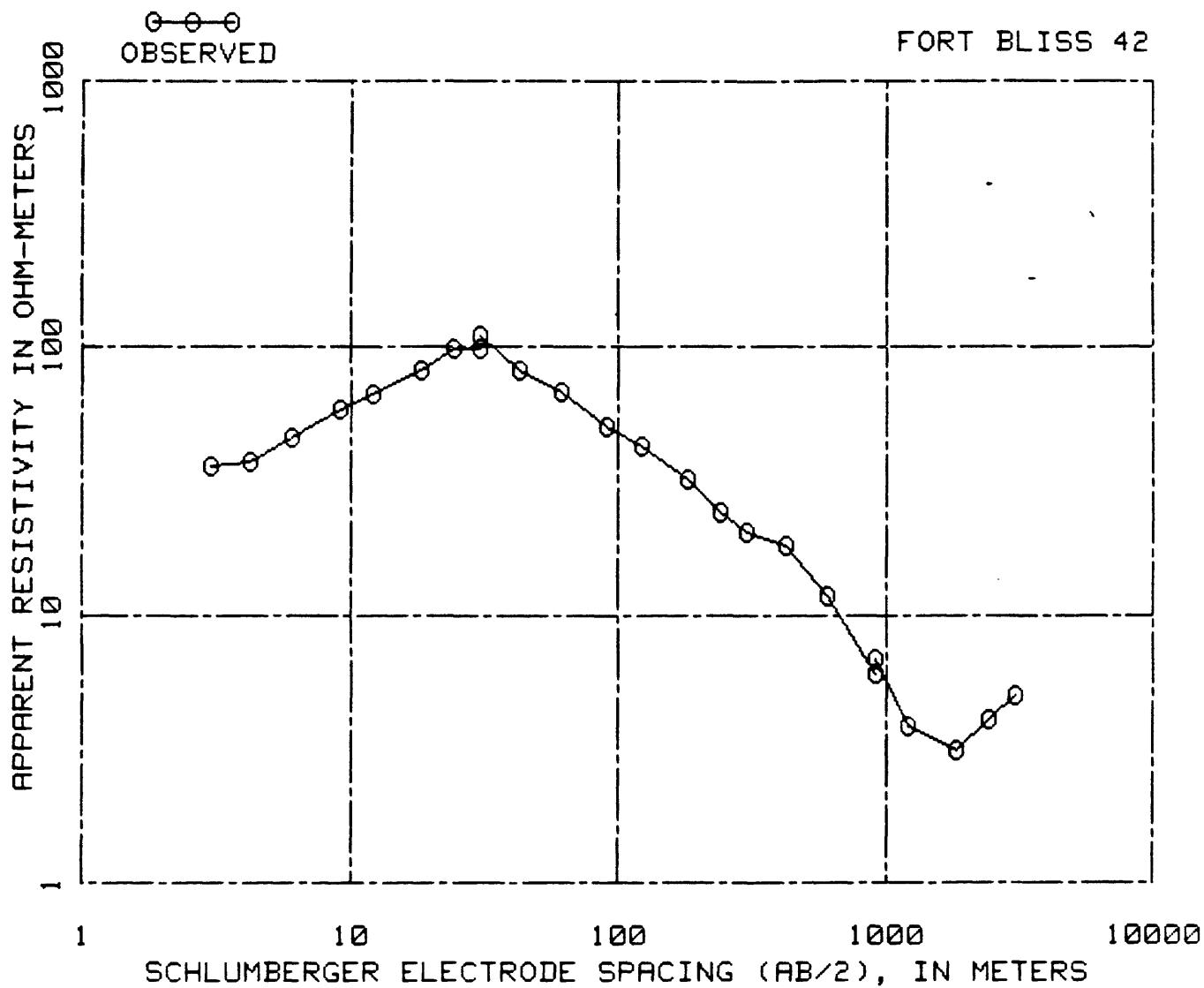
INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.30	50.16	15.50	520.54
.43	49.88	24.35	276.32
.64	49.80	38.09	159.10
.93	51.03	56.88	75.79
1.37	52.74	81.72	32.38
2.01	44.09	119.67	21.62
2.92	25.77	183.64	50.15
4.26	22.25	277.46	39.56
5.46	114.80	382.02	7.53
7.99	182.14	542.11	4.15
11.98	264.15	808.55	3.59
		1000007.55	.35

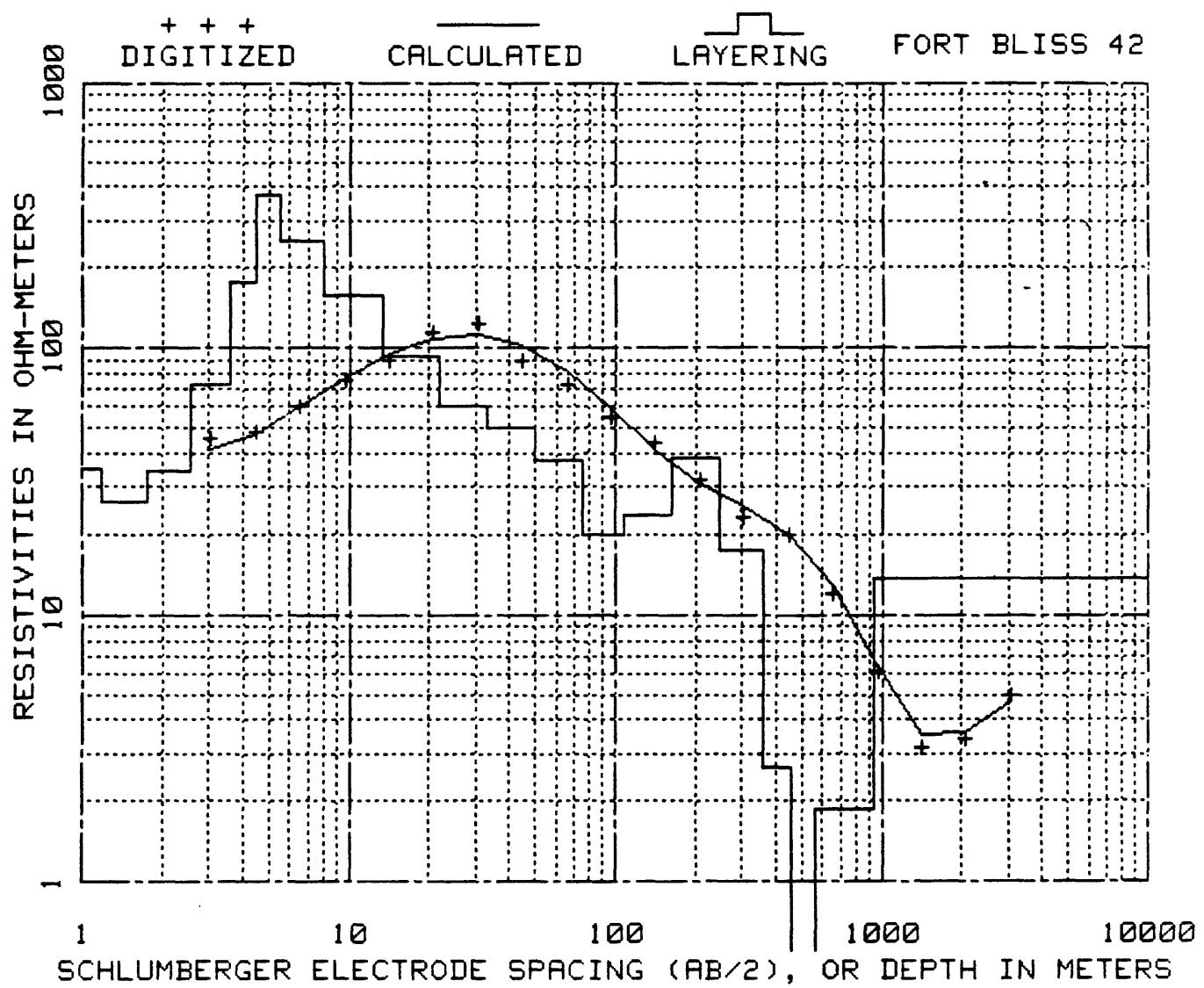




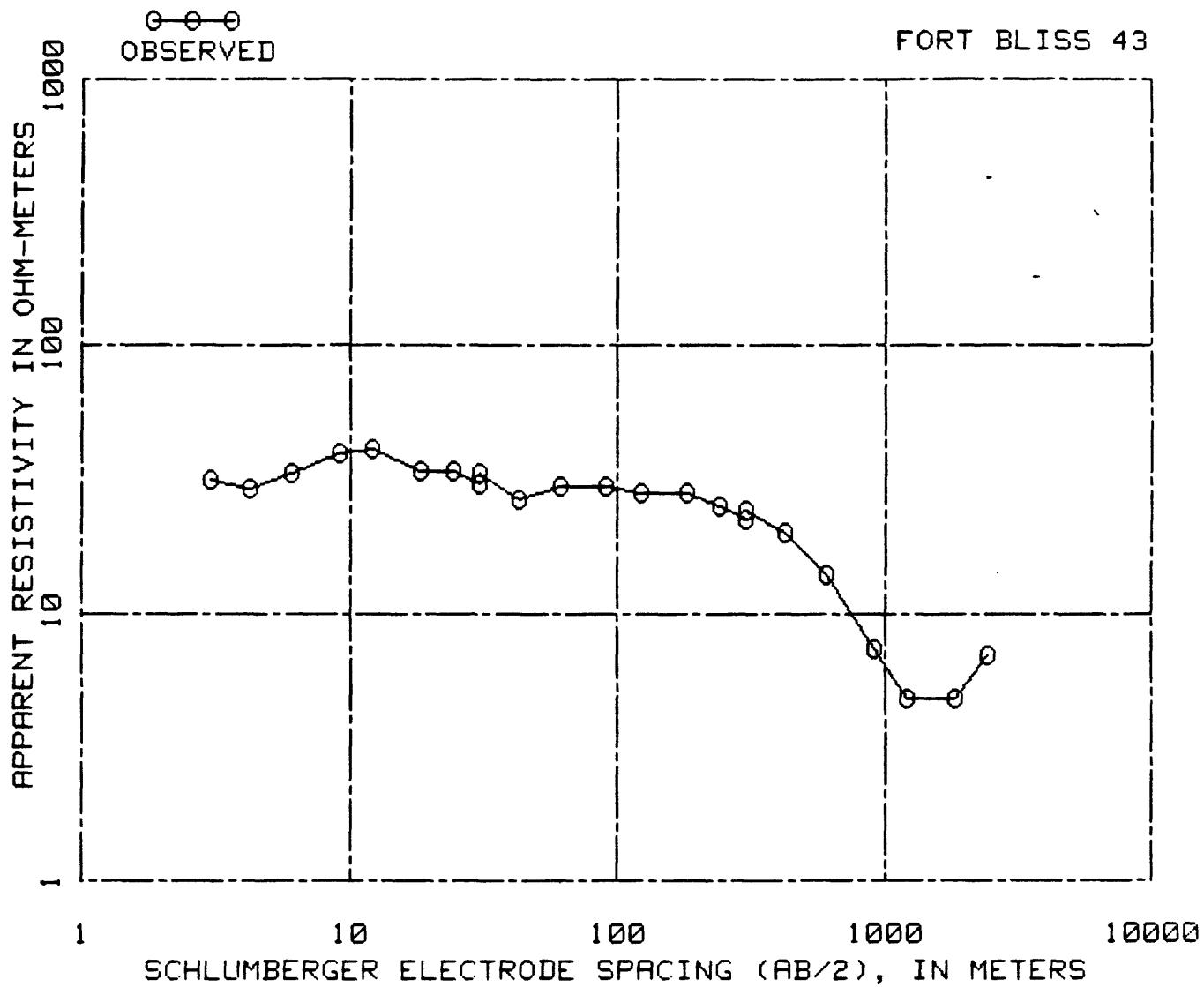
INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
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.17	12.97	10.70	150.05
.26	10.57	16.19	195.66
.38	13.31	21.62	345.04
.54	20.07	32.89	230.04
.79	17.96	50.48	152.29
1.16	7.56	75.95	105.79
1.68	4.96	113.46	95.41
2.46	12.49	169.10	108.26
3.56	29.29	250.12	83.56
5.06	57.38	351.53	23.37
7.24	101.02	429.82	1.70
		1000428.82	2.54





INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.18	42.21	13.50	158.59
.26	48.98	21.64	93.33
.38	42.17	33.16	59.98
.56	45.64	50.21	50.55
.82	45.97	74.95	37.95
1.20	35.37	108.65	20.03
1.74	26.50	163.18	23.83
2.57	34.49	244.62	38.80
3.58	72.60	359.05	17.42
4.52	177.80	461.67	2.68
5.50	373.38	561.28	.46
8.11	251.67	932.59	1.86
		1000931.59	13.81

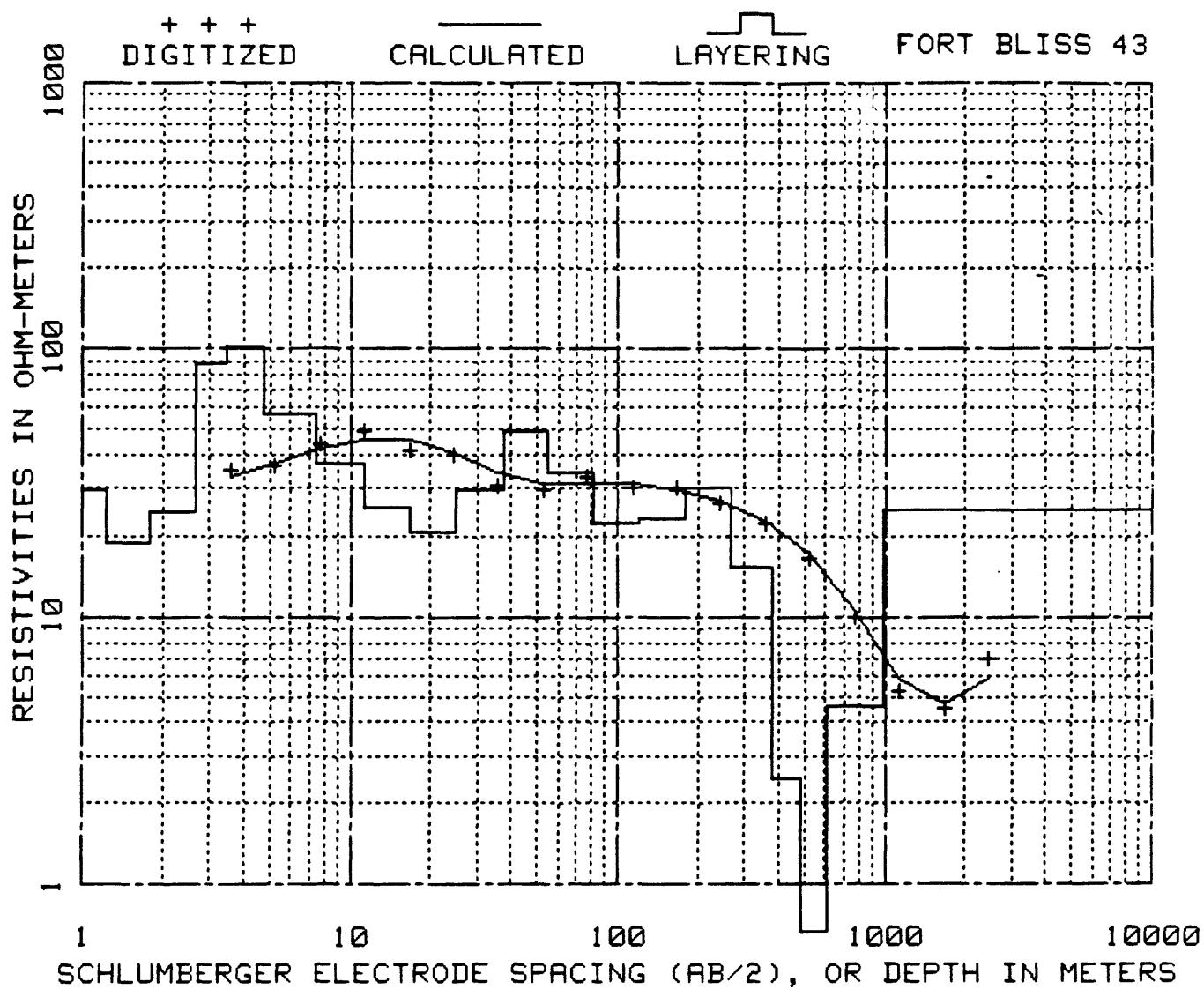


AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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3.05	31.50
4.27	29.00
6.10	33.00
9.14	39.60
12.19	41.00
18.29	34.00
24.38	34.00
30.48	30.00
30.48	33.00
42.67	26.30
60.96	29.40
91.44	29.80

AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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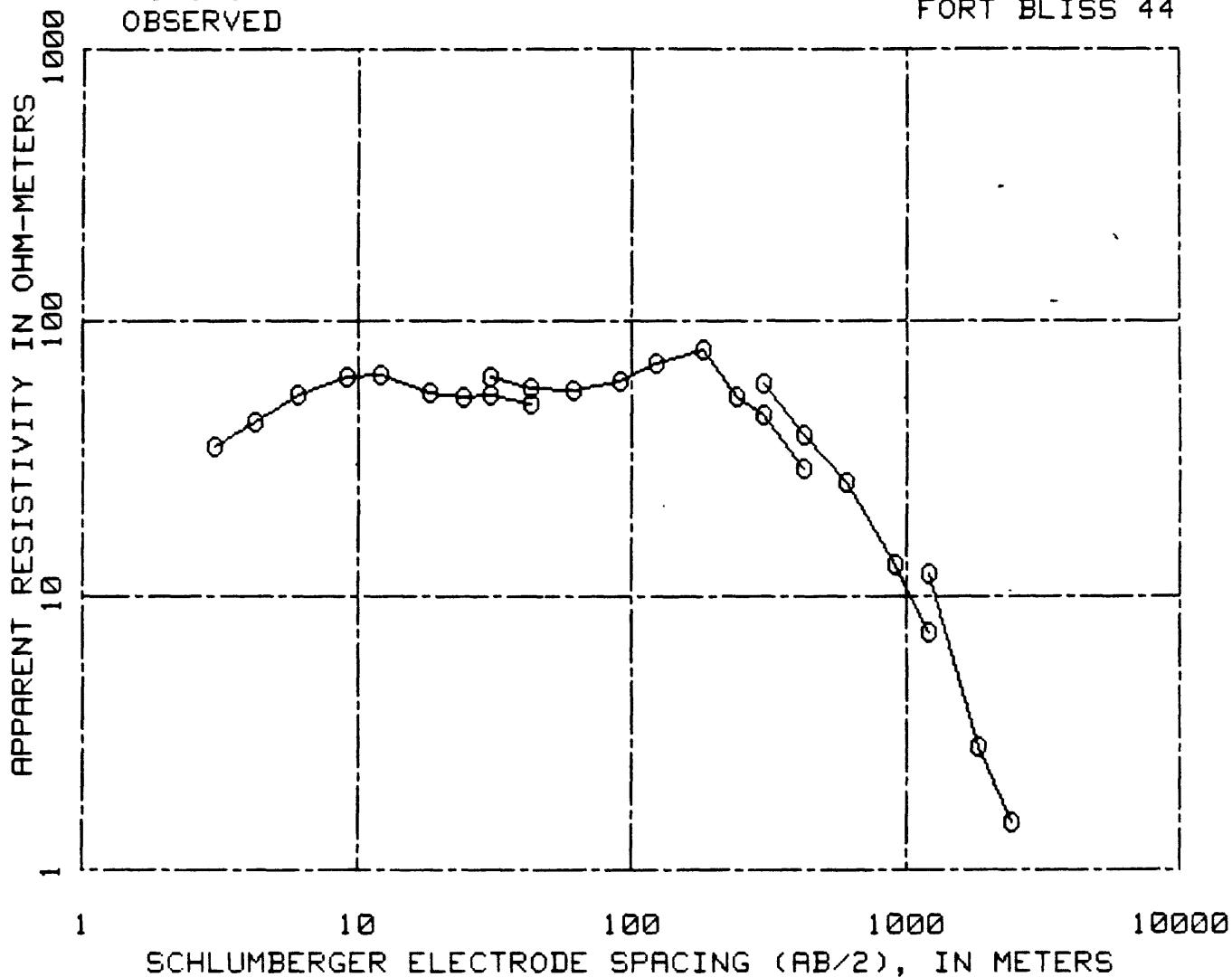
121.92	27.80
182.88	28.00
243.84	24.80
304.80	22.50
304.80	24.20
426.72	20.00
609.60	14.00
914.40	7.40
914.40	7.40
1219.20	4.80
1828.80	4.80
2438.40	6.98



INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.27	42.19	25.06	20.76
.39	42.93	37.62	29.78
.58	43.92	54.66	49.01
.85	41.39	81.71	34.18
1.24	29.82	120.33	22.22
1.79	18.84	178.09	23.08
2.64	24.37	263.40	29.95
3.45	88.70	382.64	15.27
4.76	103.30	482.95	2.46
7.44	57.54	612.46	.66
11.35	37.04	995.56	4.61
16.91	25.67	1000994.56	24.78

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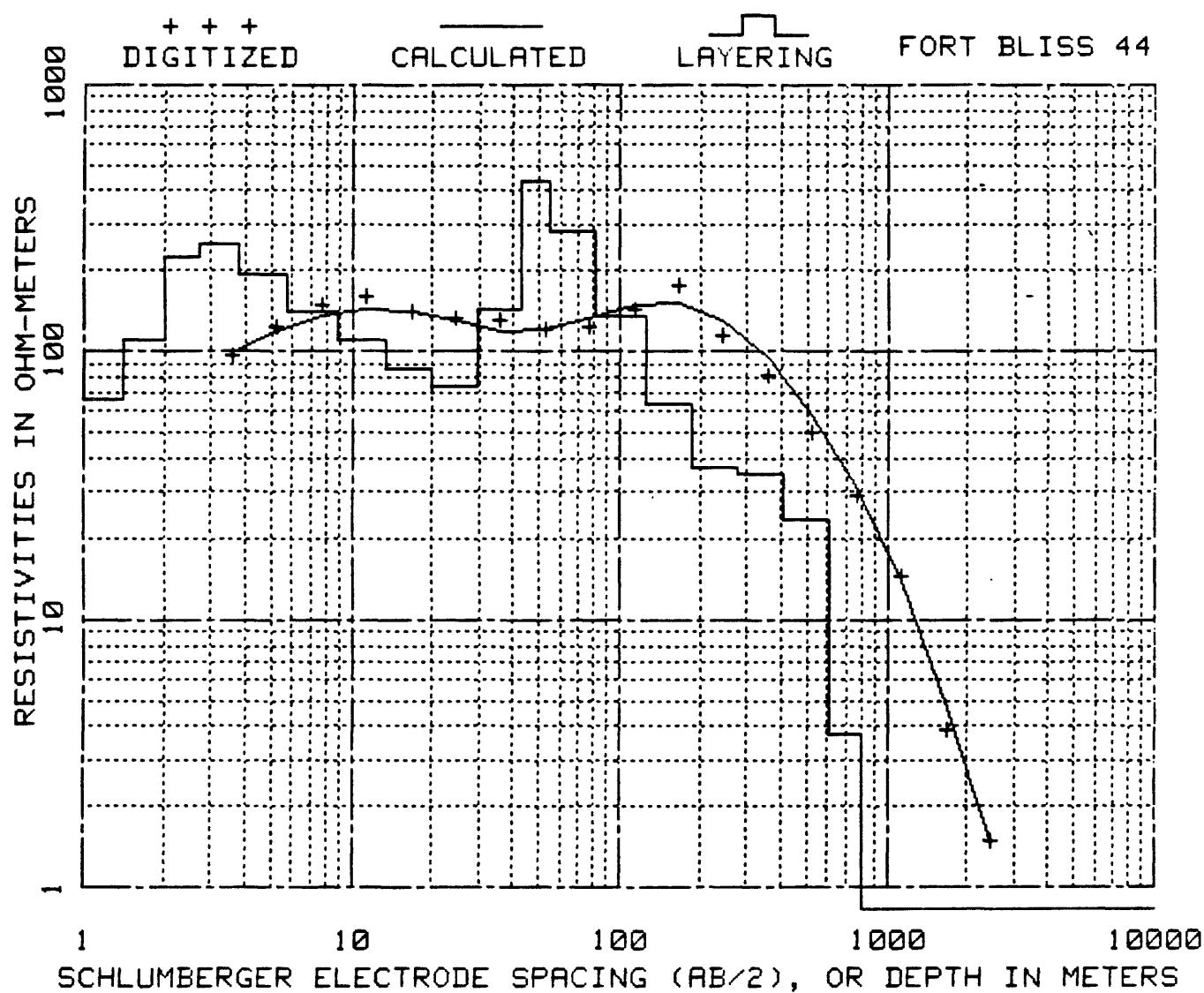


AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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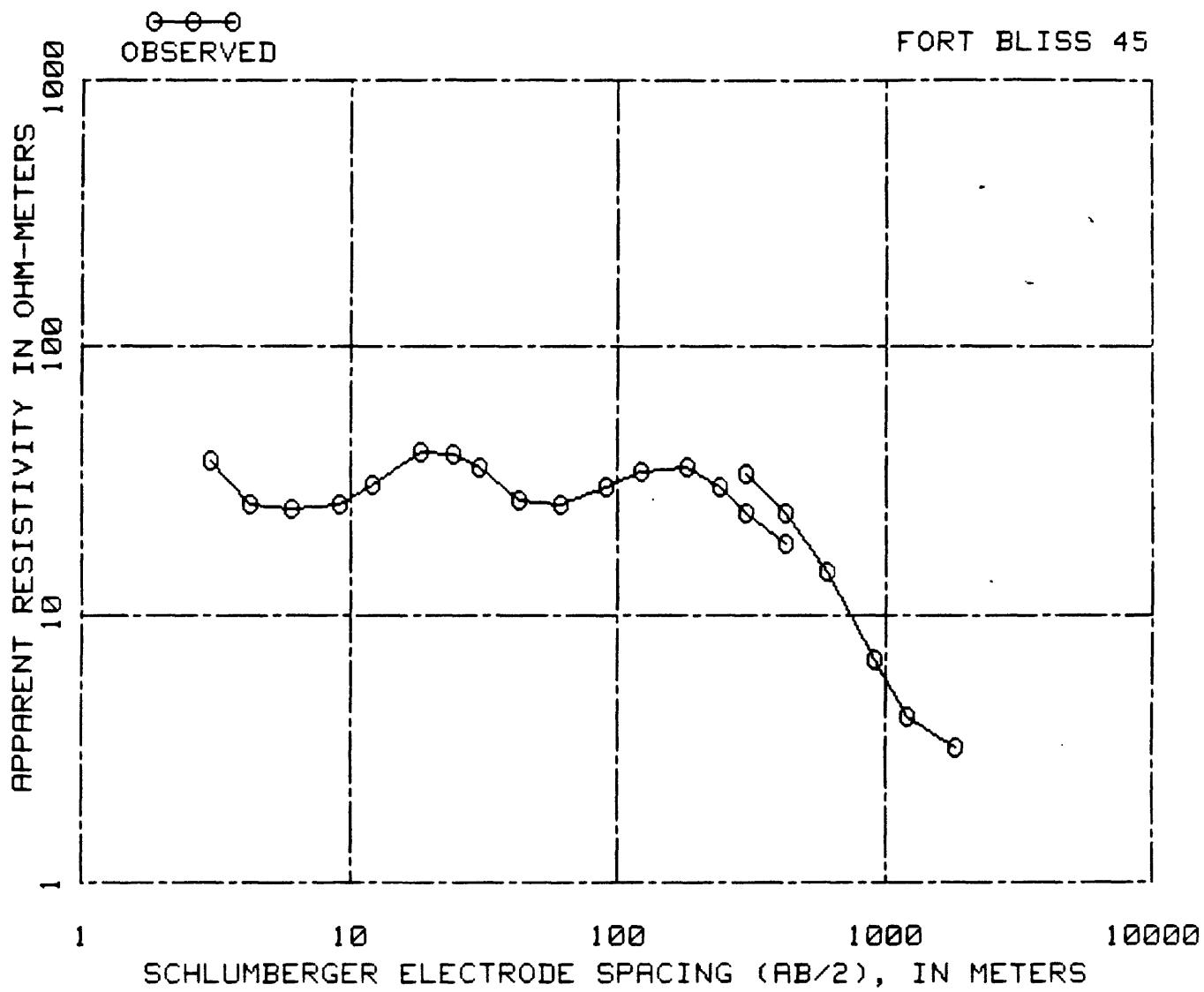
3.05	35.00
4.27	43.50
6.10	54.50
9.14	63.00
12.19	64.00
18.29	55.00
24.38	53.00
30.48	54.00
42.67	50.00
30.48	63.00
42.67	57.50
60.96	56.00
91.44	60.00

AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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121.92	70.00
182.88	78.00
243.84	53.00
304.80	46.00
426.72	29.00
304.80	59.00
426.72	38.20
609.60	26.00
914.40	13.00
1219.20	7.30
1219.20	12.00
1828.80	2.80
2438.40	1.50



INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.21	69.16	19.75	86.21
.30	71.01	29.26	74.34
.44	73.07	42.77	143.13
.65	70.20	54.37	431.47
.96	62.40	81.09	285.16
1.41	66.49	125.62	136.64
2.01	110.65	186.98	63.91
2.69	223.53	274.70	37.21
3.77	254.39	410.64	35.18
5.75	193.27	606.92	23.50
8.81	140.07	811.85	3.73
13.26	111.00	1000810.85	.84

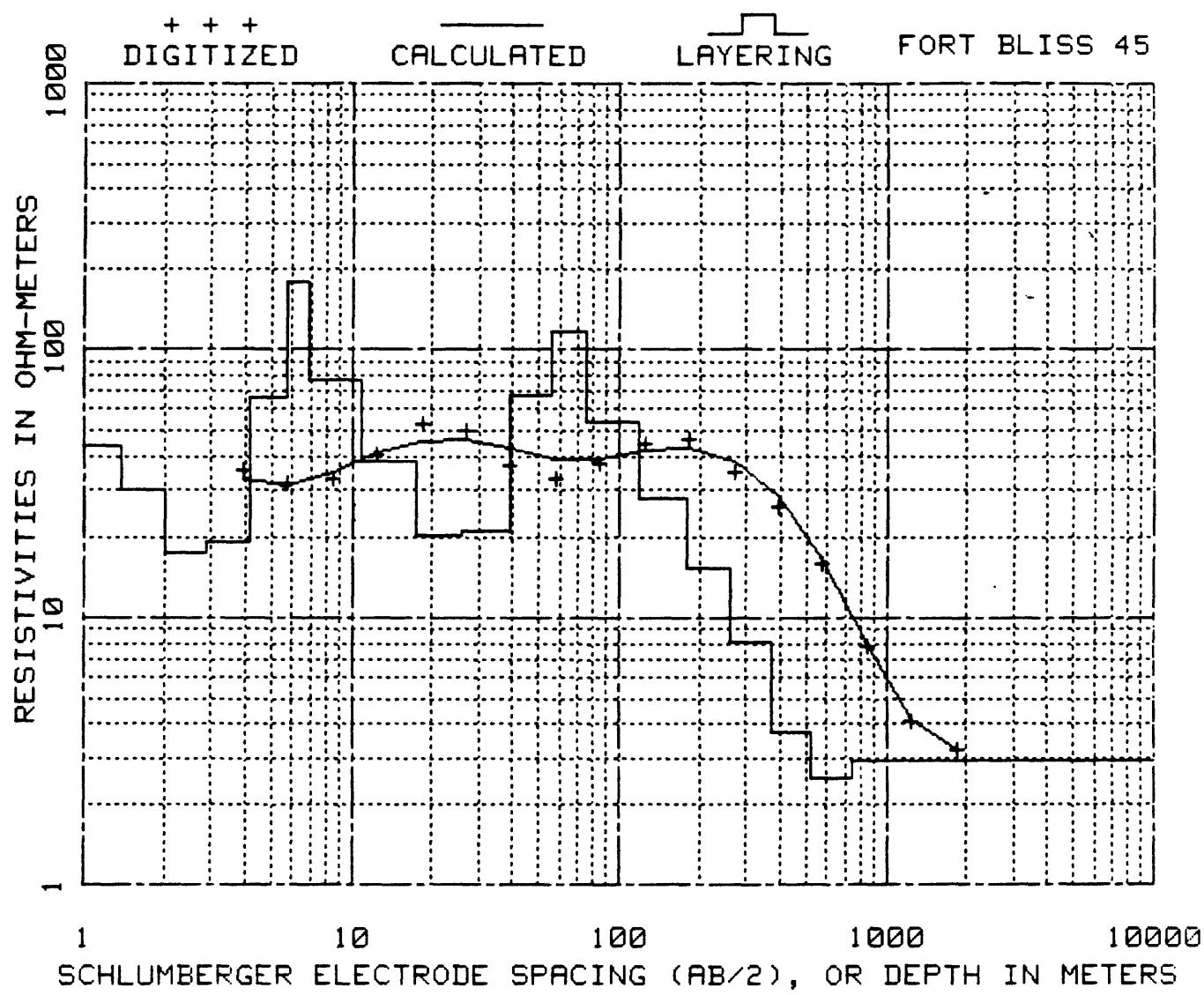


AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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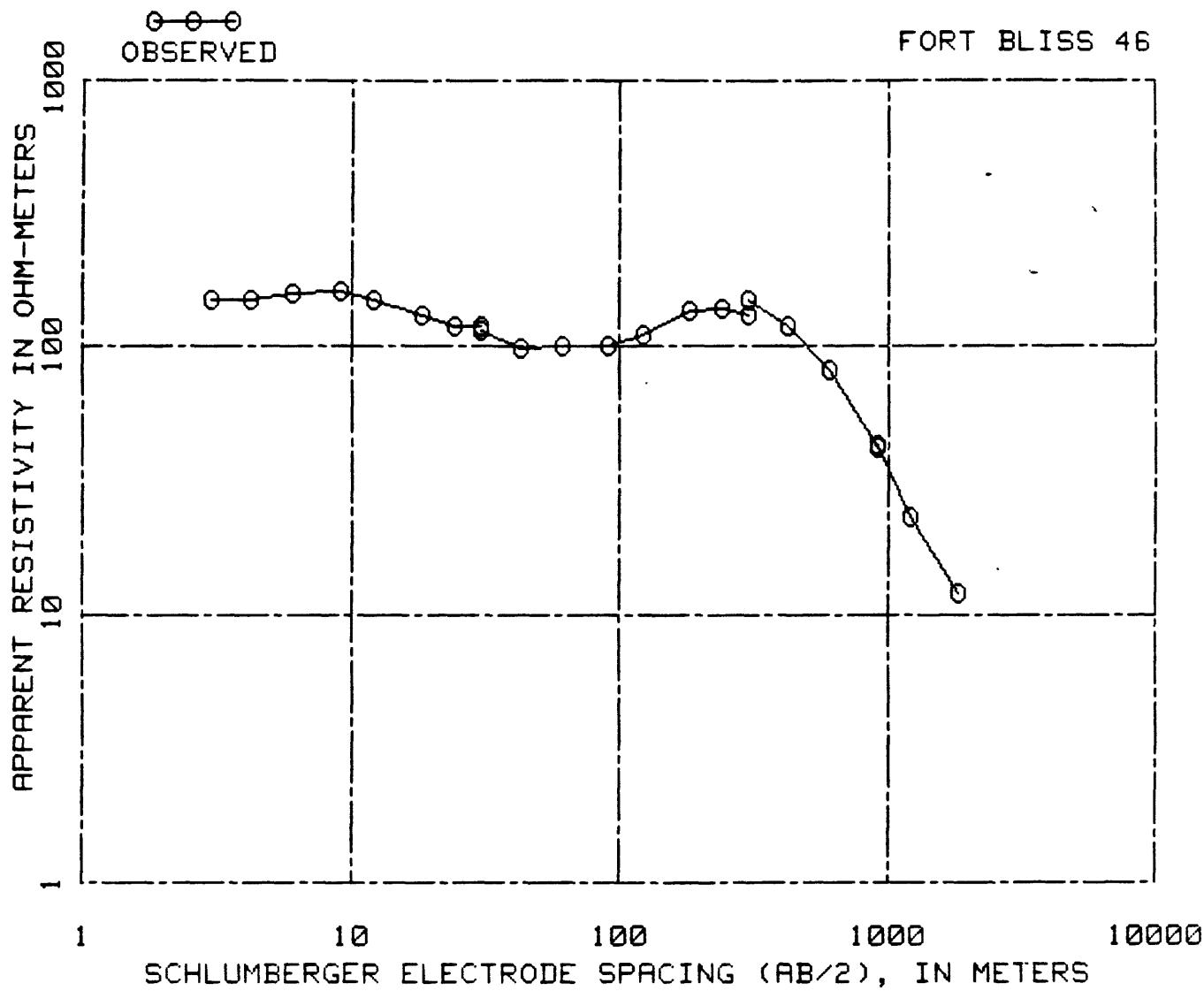
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
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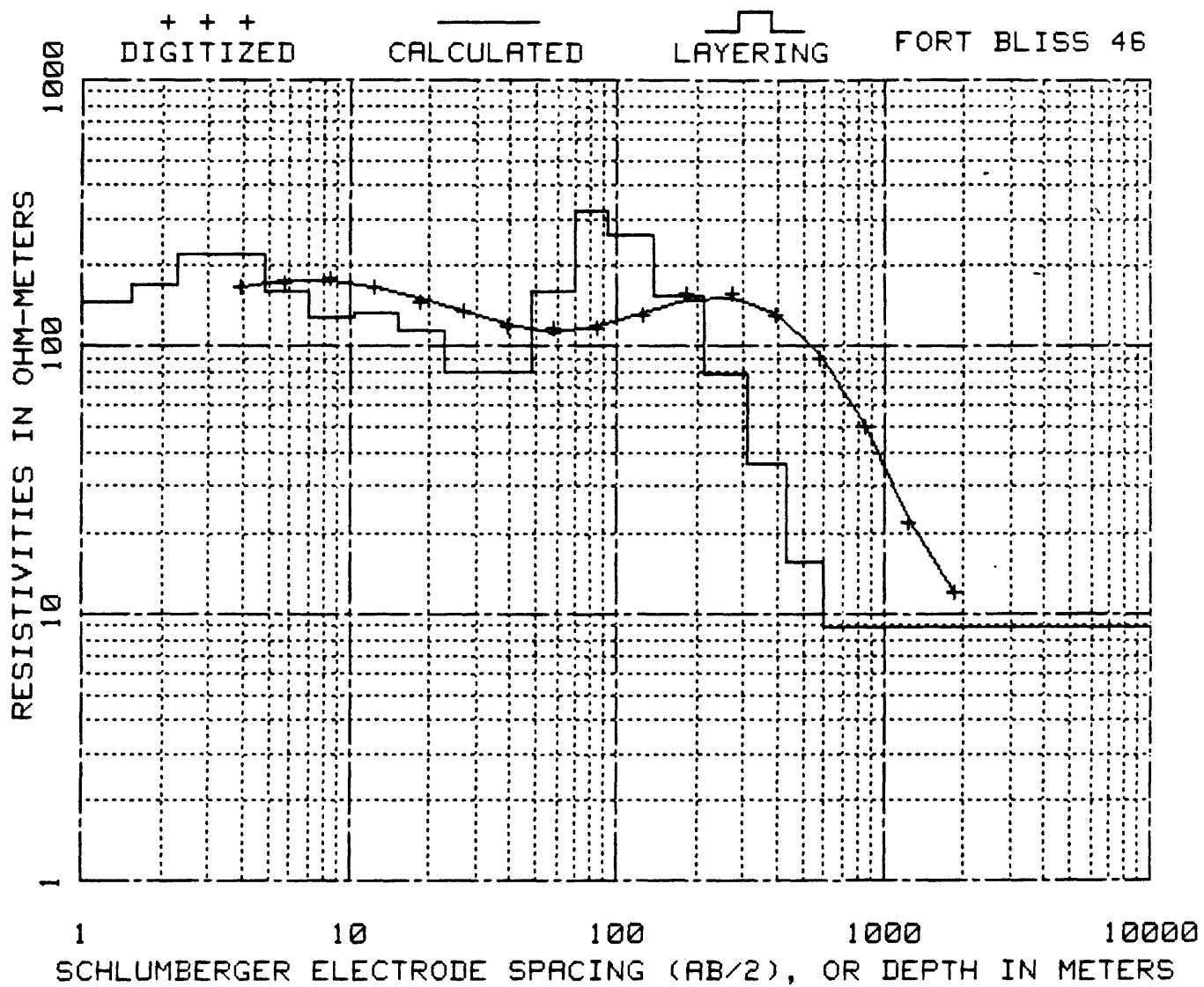
3.05	37.50
4.27	26.00
6.10	24.80
9.14	26.00
12.19	31.00
18.29	41.00
24.38	40.00
30.48	36.00
30.48	36.00
42.67	27.00
60.96	26.00
91.44	30.00

121.92	34.20
182.88	36.00
243.84	30.00
384.80	24.00
426.72	18.50
384.80	33.50
426.72	24.00
609.60	14.50
914.40	6.80
914.40	6.80
1219.20	4.20
1828.80	3.20

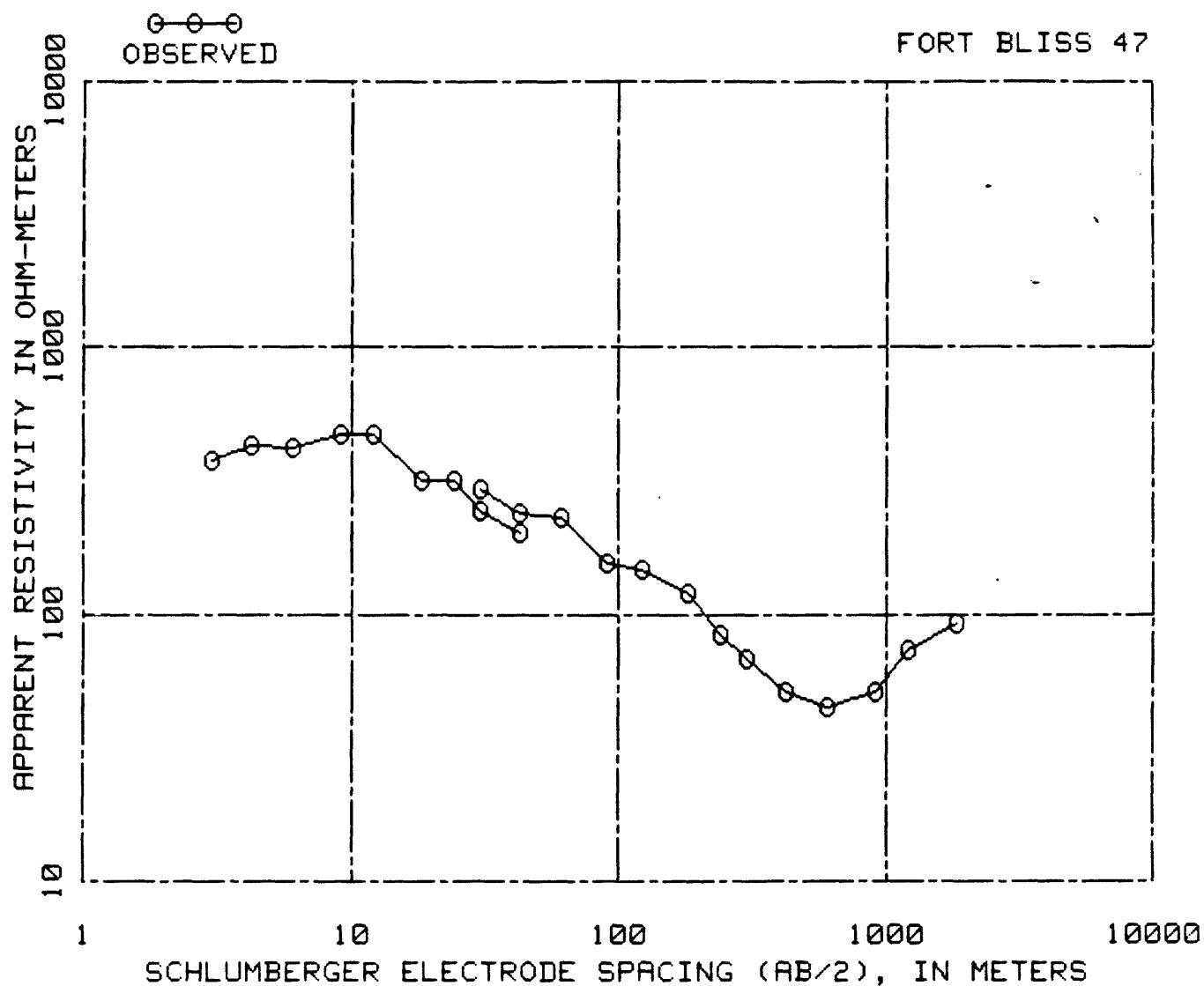


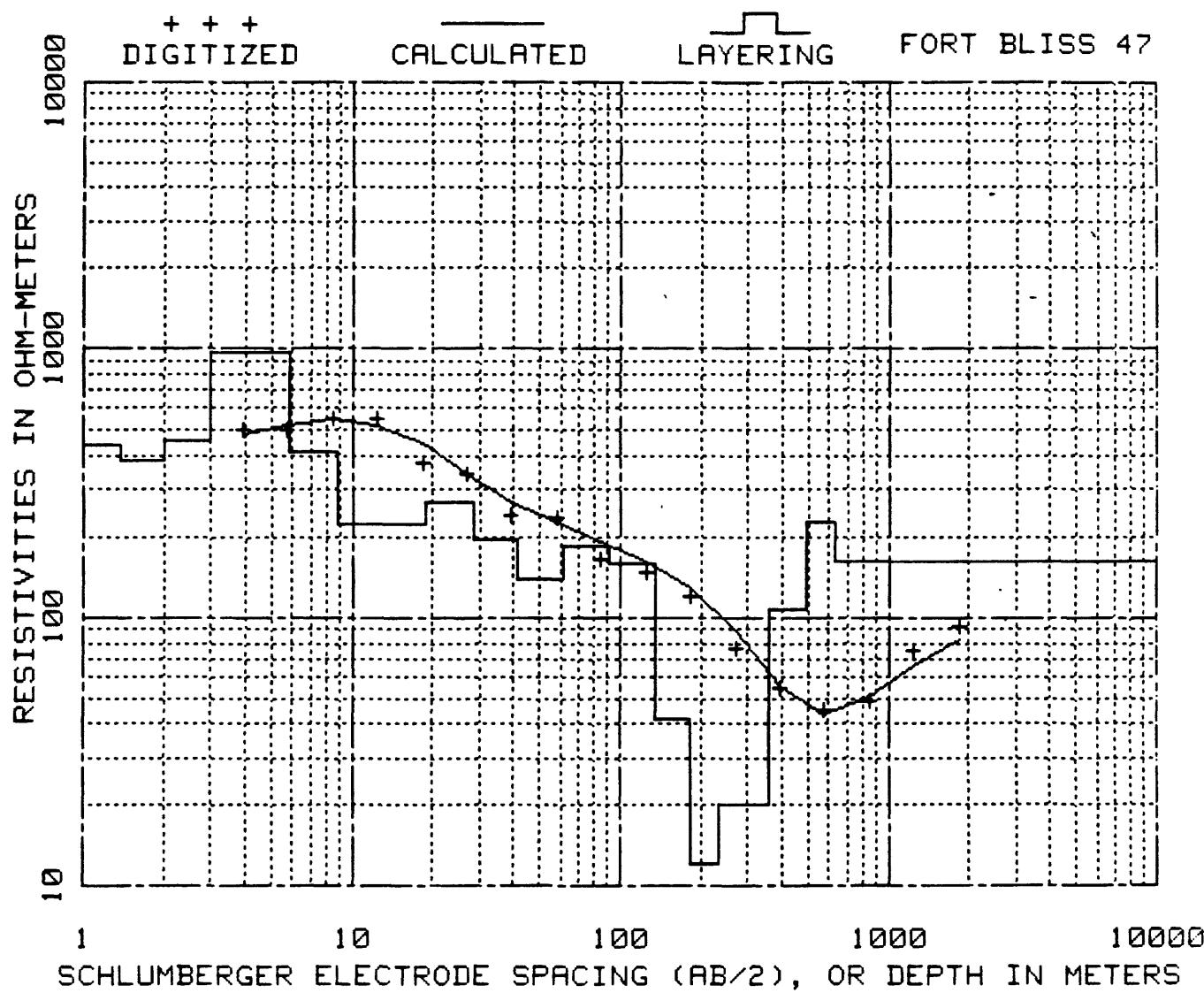
INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.30	46.39	17.30	38.78
.43	46.52	25.81	28.38
.64	47.37	39.13	21.12
.93	48.23	55.38	67.19
1.37	44.03	75.04	115.98
2.00	30.11	118.65	54.28
2.86	17.43	179.65	27.99
4.20	19.11	262.19	15.32
5.71	66.03	373.68	8.02
6.96	180.64	521.44	3.74
10.98	76.91	753.79	2.52
		1000752.79	2.96



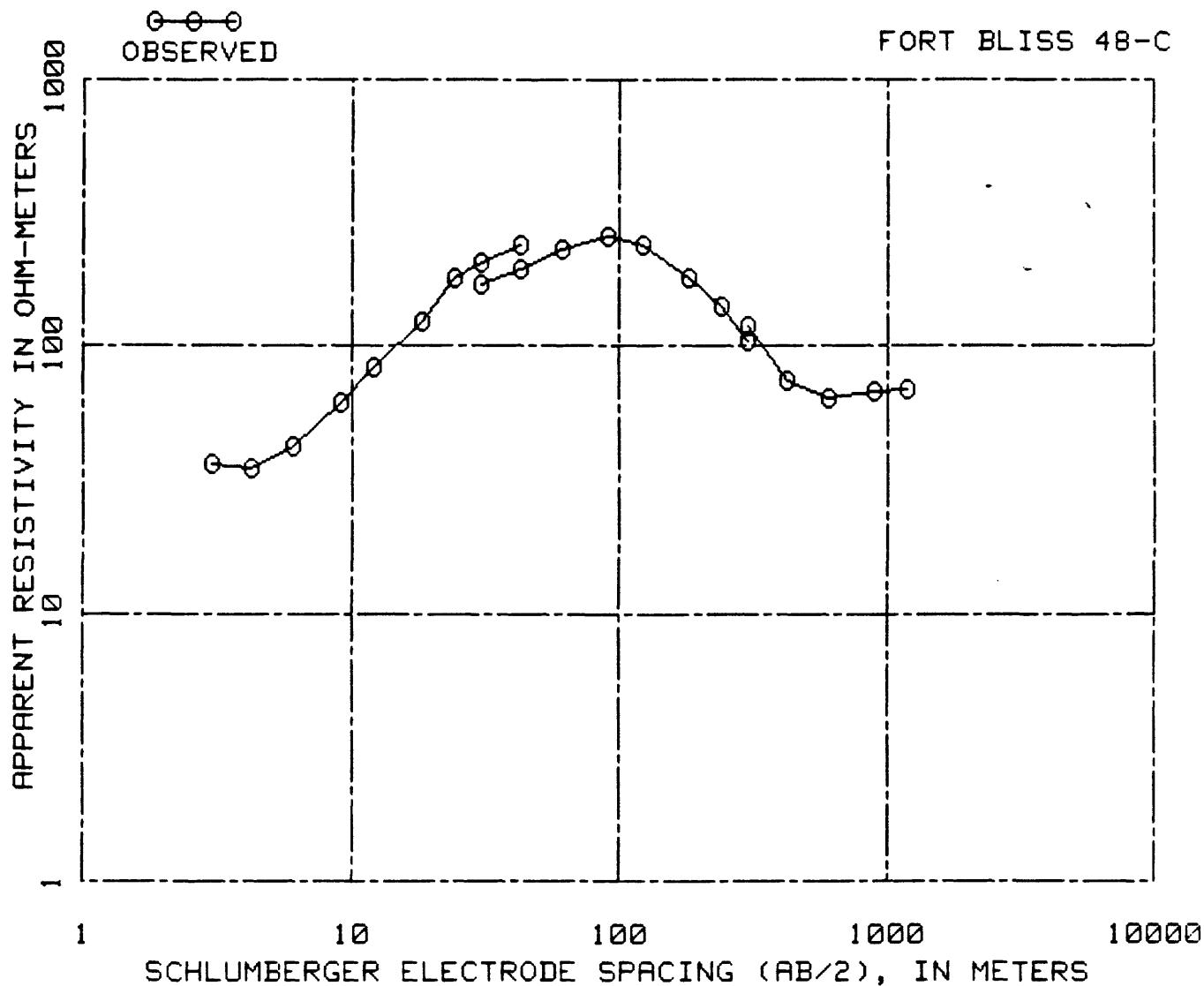


INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.23	152.54	15.32	133.32
.33	154.07	22.49	114.30
.49	155.65	32.69	79.65
.72	154.27	48.04	79.93
1.05	147.63	69.38	159.33
1.55	145.97	93.39	320.30
2.27	171.48	138.18	259.76
3.29	223.23	210.34	154.23
4.82	221.02	308.59	79.11
7.10	159.42	434.82	36.31
10.41	129.29	596.79	15.62
		1000595.79	8.81

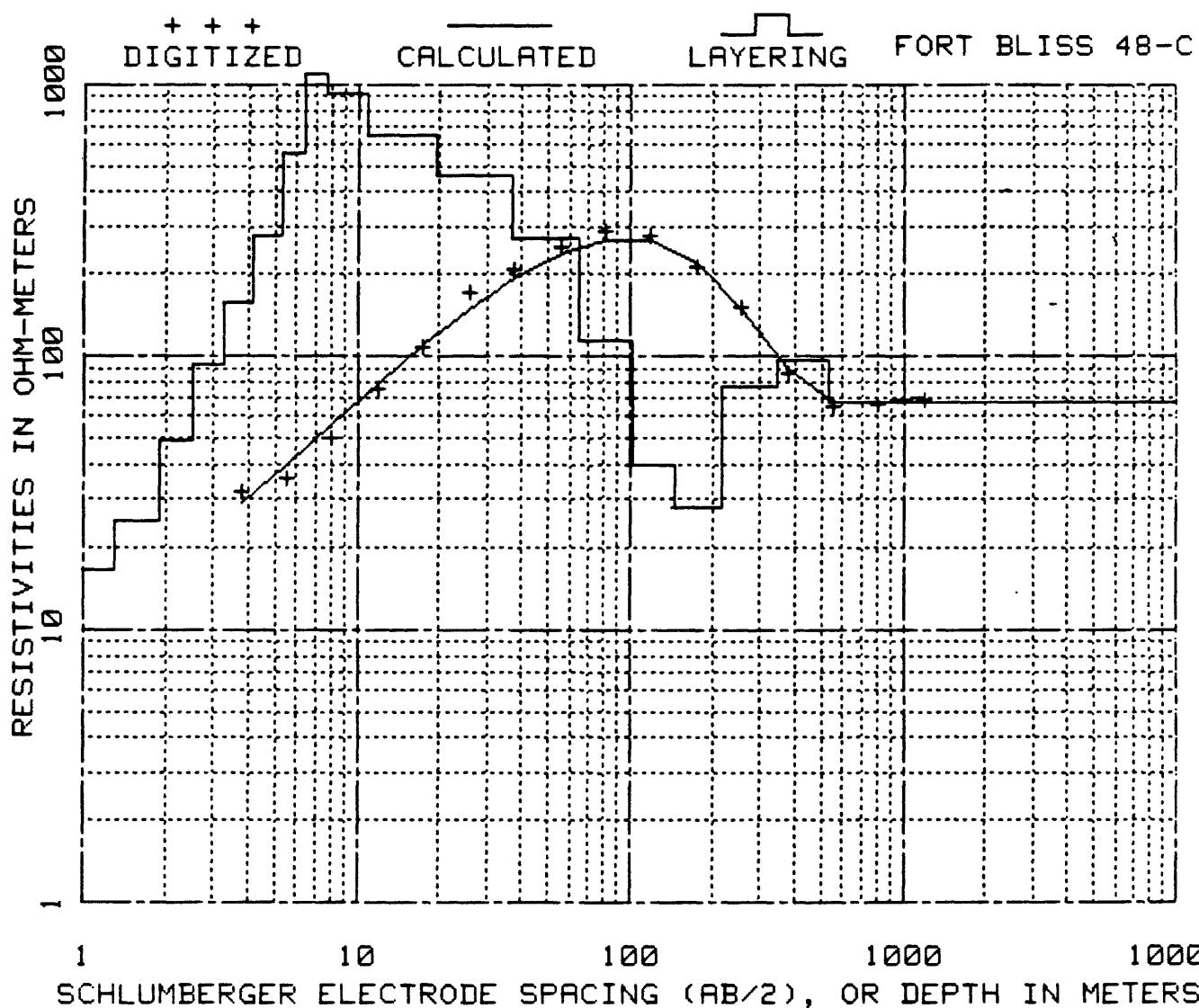




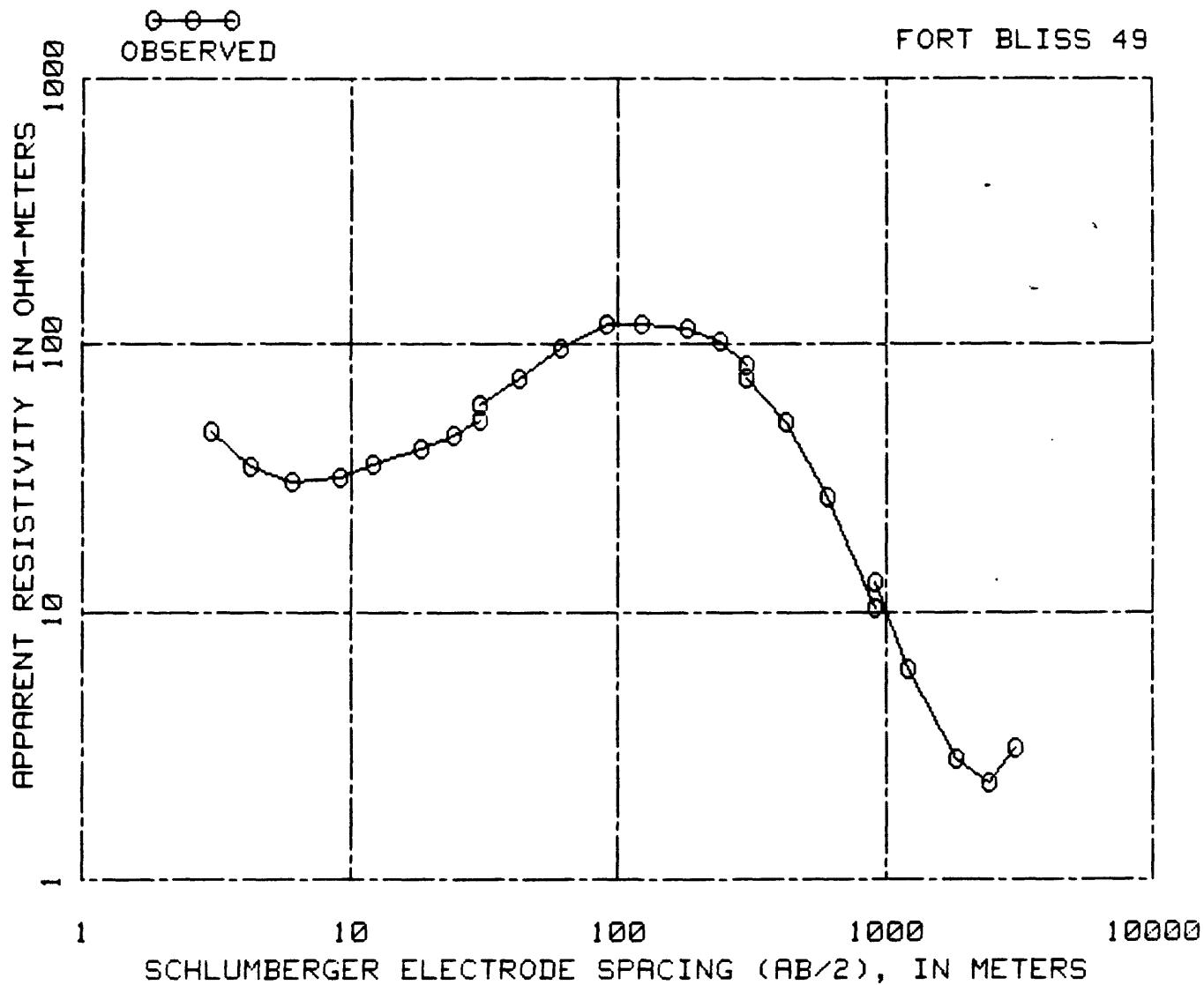
INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.30	463.50	18.83	223.52
.43	462.23	28.19	267.21
.64	467.19	41.66	197.54
.93	471.78	60.84	139.36
1.37	443.05	90.54	185.42
2.01	384.98	133.92	159.87
2.95	460.39	181.87	41.69
4.06	959.63	234.25	12.08
5.91	966.70	359.38	20.06
8.80	416.38	493.86	107.60
12.71	223.02	632.81	226.00
		1000631.81	160.79

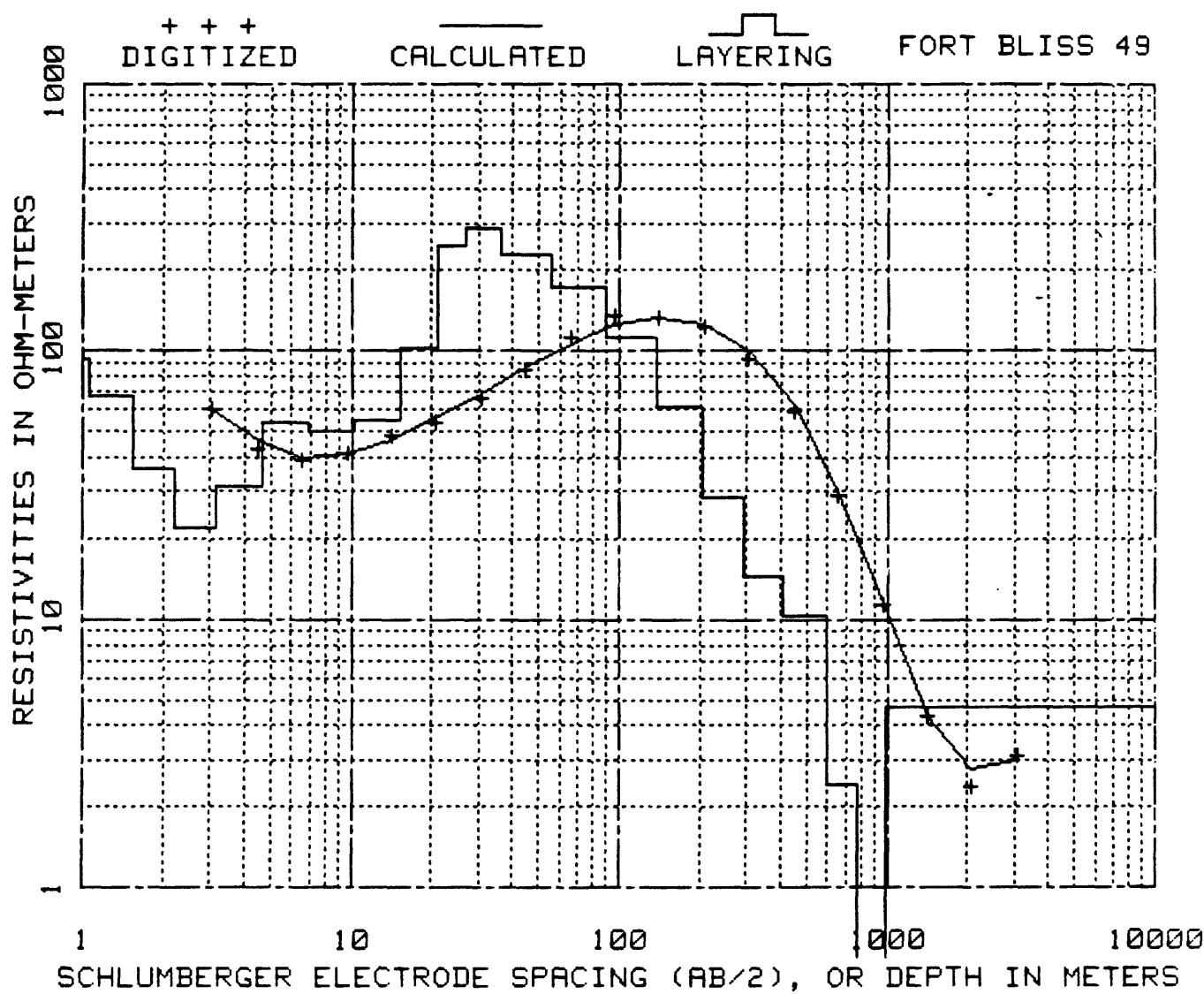


AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
3.05	36.50	60.96	231.20
4.27	35.00	91.44	255.00
6.10	42.00	121.92	240.00
9.14	62.00	182.88	180.00
12.19	84.00	243.84	140.00
18.29	124.00	304.80	104.00
24.38	180.00	304.80	119.00
30.48	205.00	426.72	75.00
42.67	240.00	609.60	64.50
30.48	169.60	905.26	67.10
42.67	192.80	1193.29	68.50



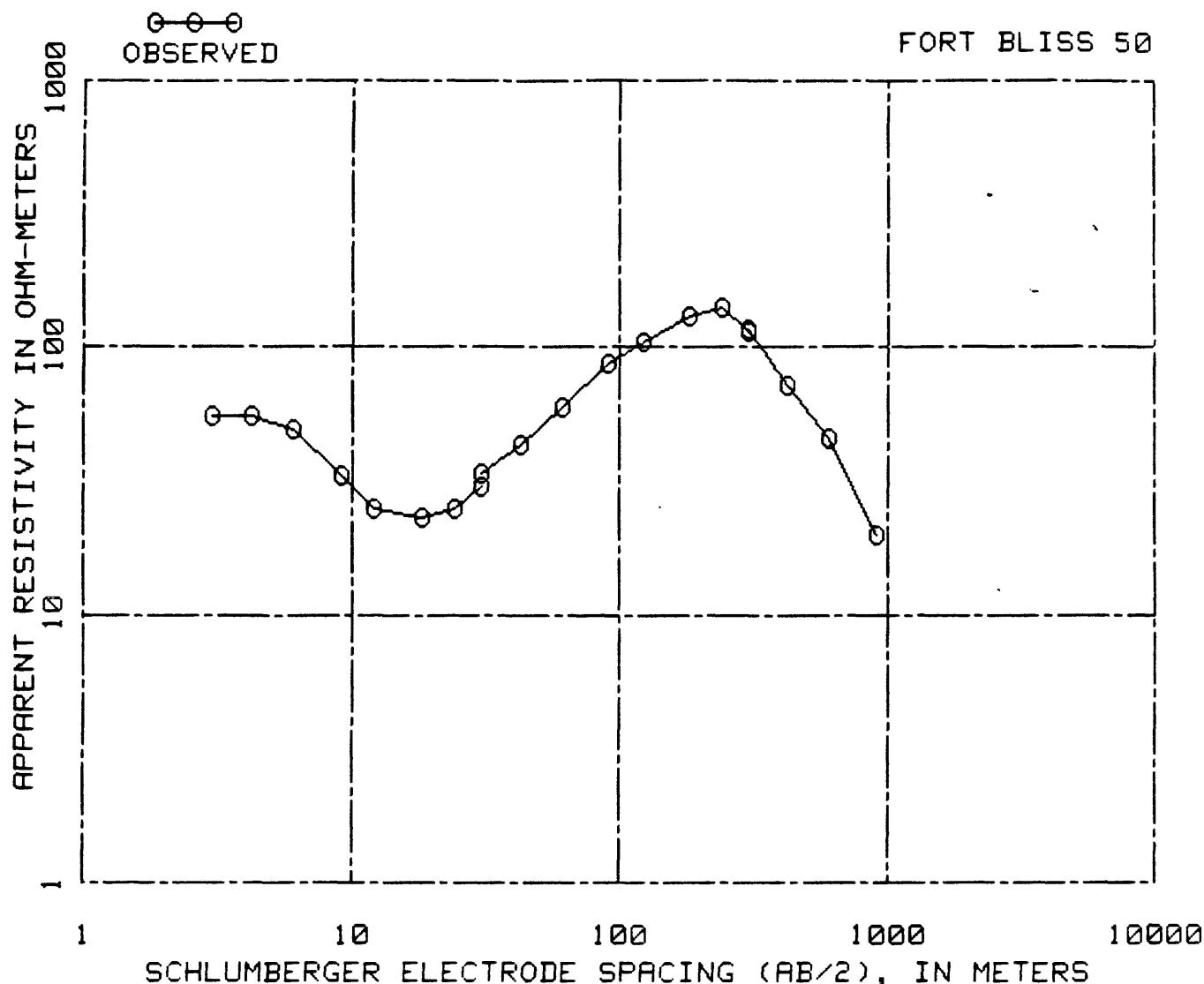
INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.28	15.76	7.76	1089.20
.42	15.67	18.95	917.67
.61	15.29	19.36	647.73
.89	14.90	36.86	462.83
1.31	16.61	65.28	270.85
1.88	25.18	102.37	115.43
2.53	49.57	145.35	39.79
3.26	93.96	215.36	28.10
4.18	156.65	346.90	77.46
5.28	277.41	534.76	96.72
6.47	555.80	1000533.76	67.56

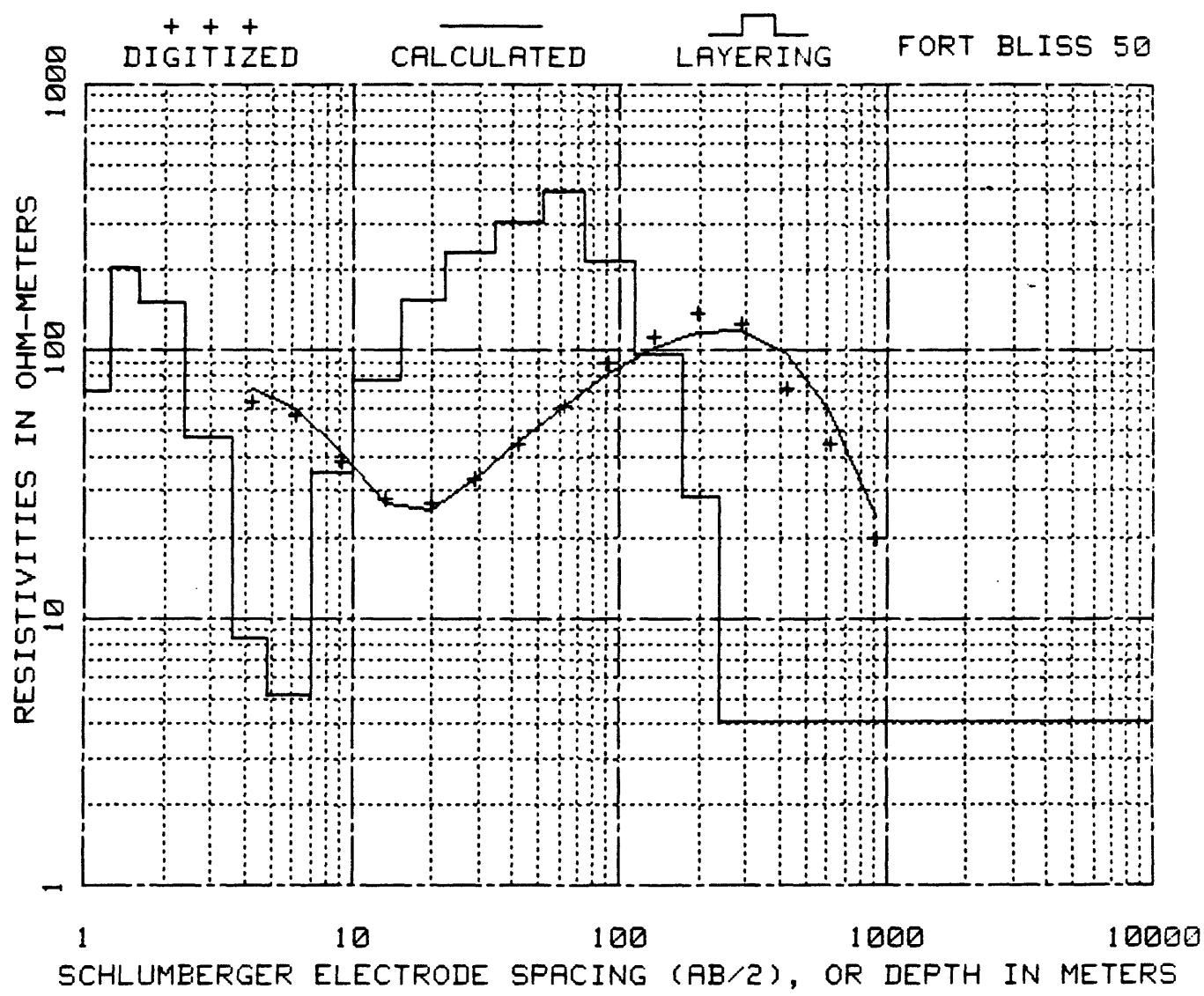




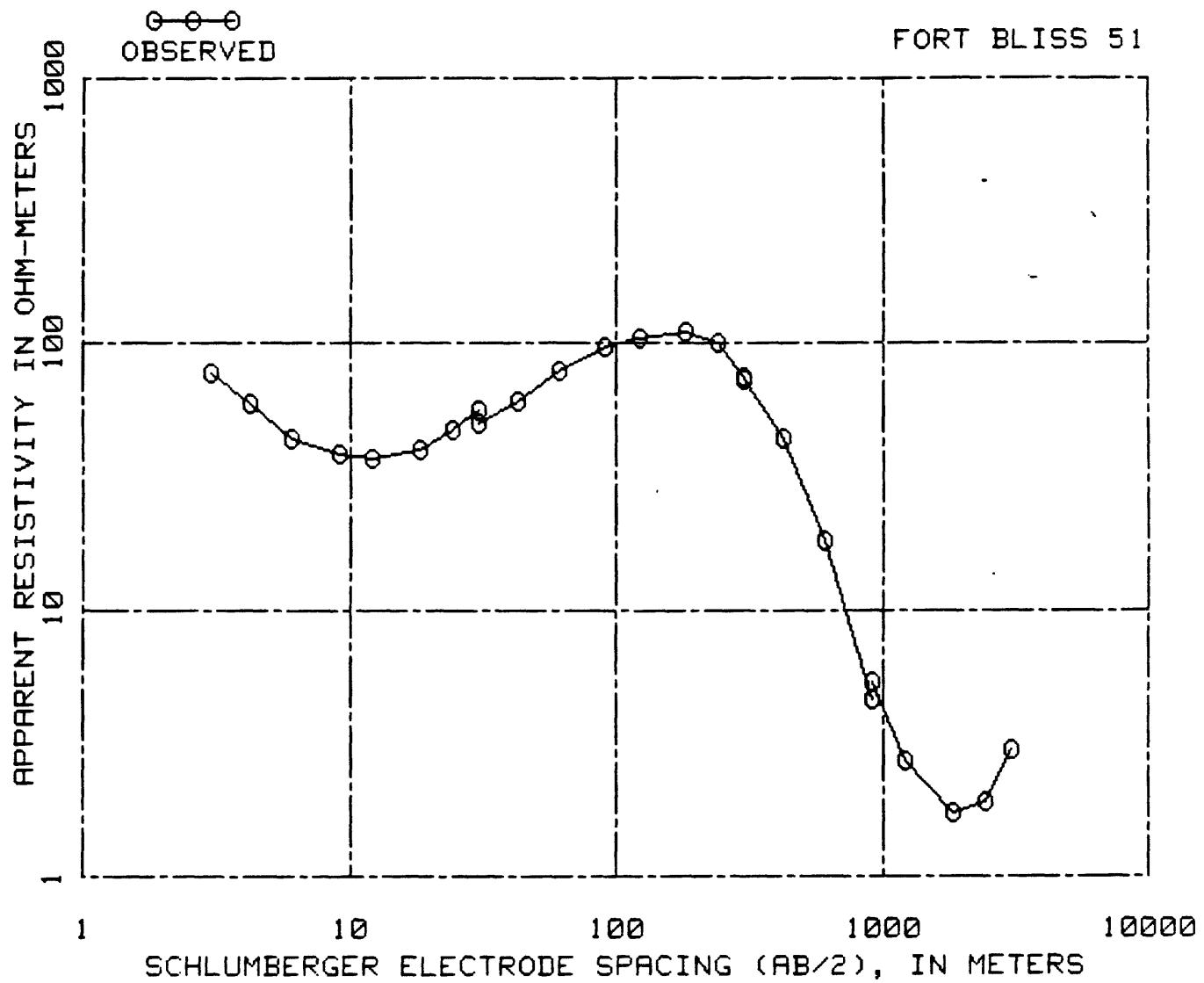
INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
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.23	96.75	21.20	101.52
.34	97.74	26.85	249.31
.49	99.41	36.34	290.19
.72	100.50	55.77	229.41
1.06	93.18	88.98	173.68
1.55	67.63	138.10	112.65
2.21	36.32	205.03	61.14
3.13	22.10	291.49	28.52
4.68	31.43	409.61	14.46
6.90	54.17	596.42	10.35
10.25	50.24	777.87	2.42
15.15	55.19	992.42	.54
		1000991.42	4.67





INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.19	51.96	7.00	5.12
.27	69.49	10.08	35.38
.40	78.01	15.16	77.20
.59	51.17	22.28	154.17
.86	39.11	33.97	232.55
1.26	70.45	52.18	305.22
1.61	205.49	73.94	398.24
2.36	152.68	114.84	216.20
3.60	47.05	171.32	96.41
4.87	8.39	238.90	28.26
		1000237.90	4.09

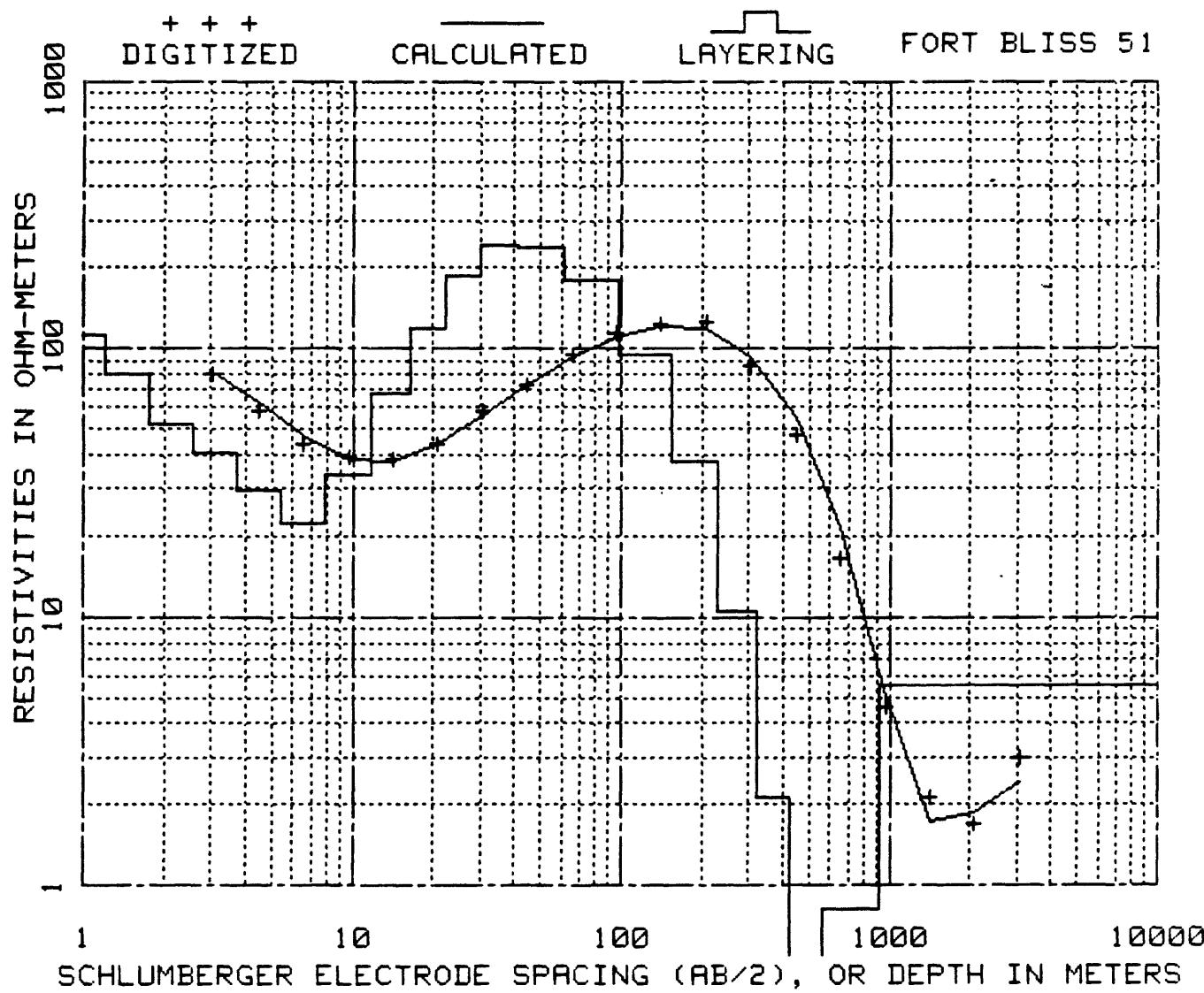


AB/2 IN METERS	OBSERVED IN OHM-METERS
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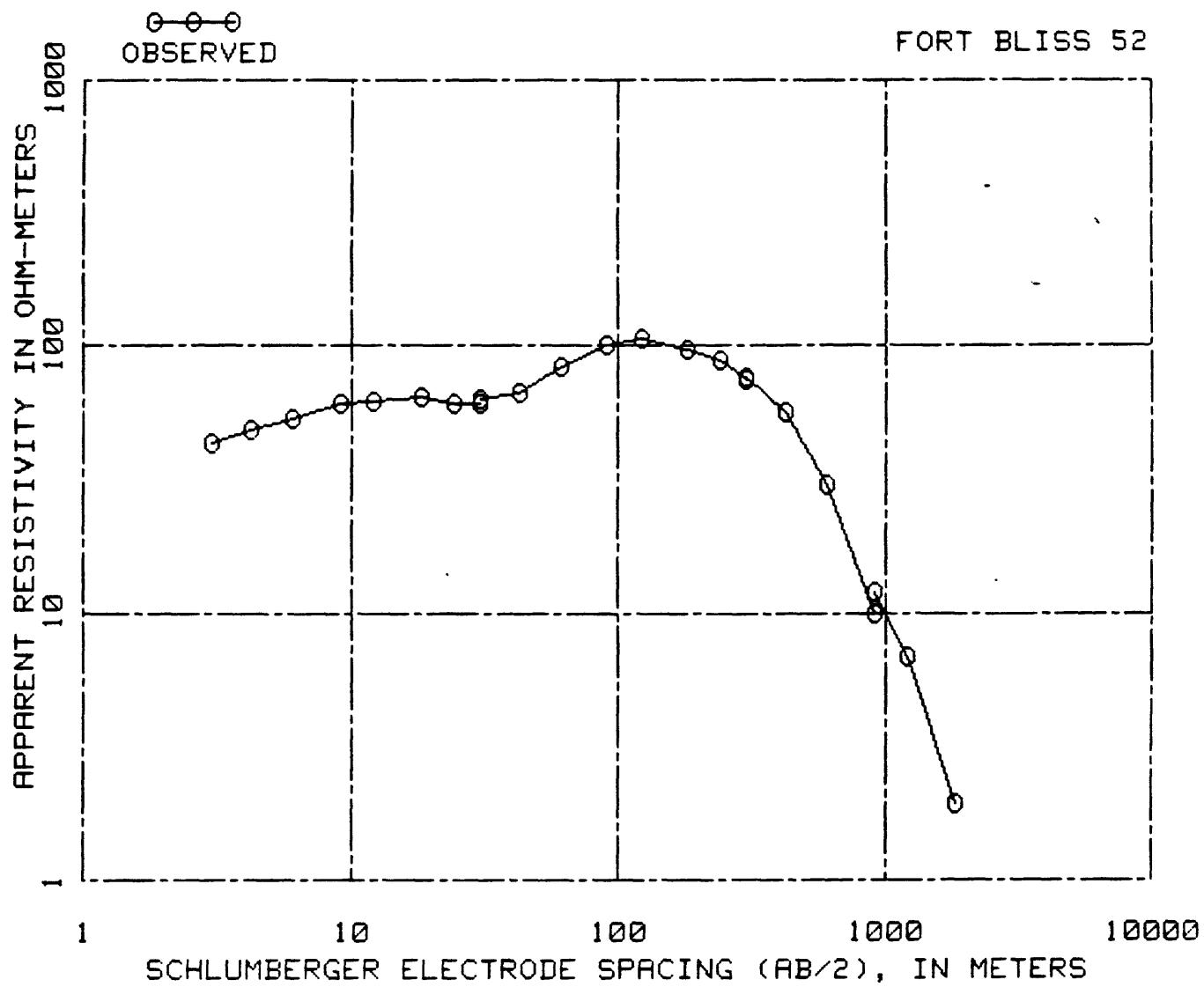
3.05	77.80
4.27	59.00
6.10	44.00
9.14	38.50
12.19	37.00
18.29	40.00
24.38	47.00
30.48	56.00
30.48	58.20
42.67	61.00
60.96	78.00
91.44	97.00

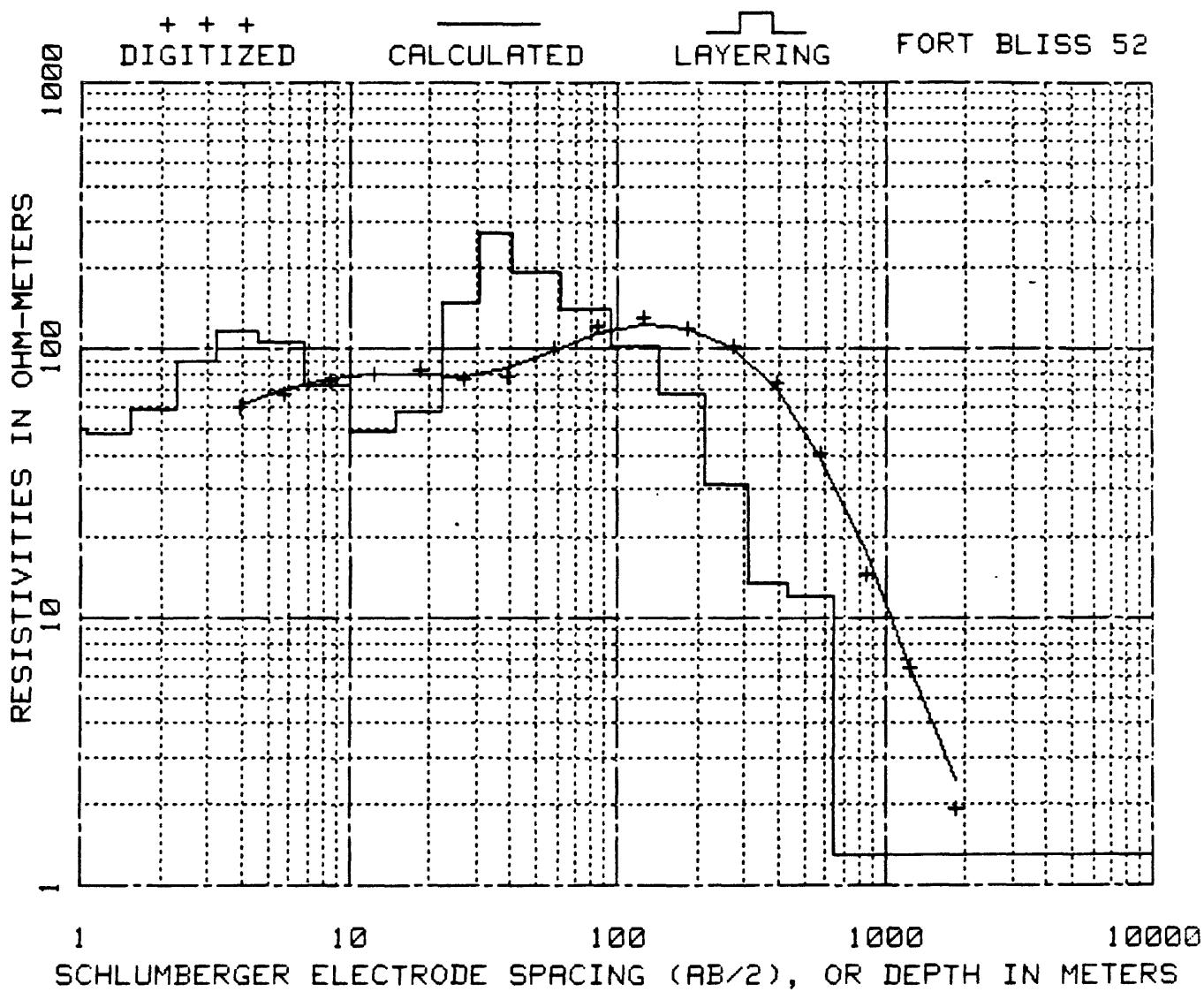
AB/2 IN METERS	OBSERVED IN OHM-METERS
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121.92	104.00
182.88	110.00
243.84	100.00
304.80	74.00
304.80	73.00
426.72	44.00
609.60	18.00
914.40	4.60
914.40	5.40
1219.20	2.70
1828.80	1.74
2438.40	1.91
3048.00	3.00

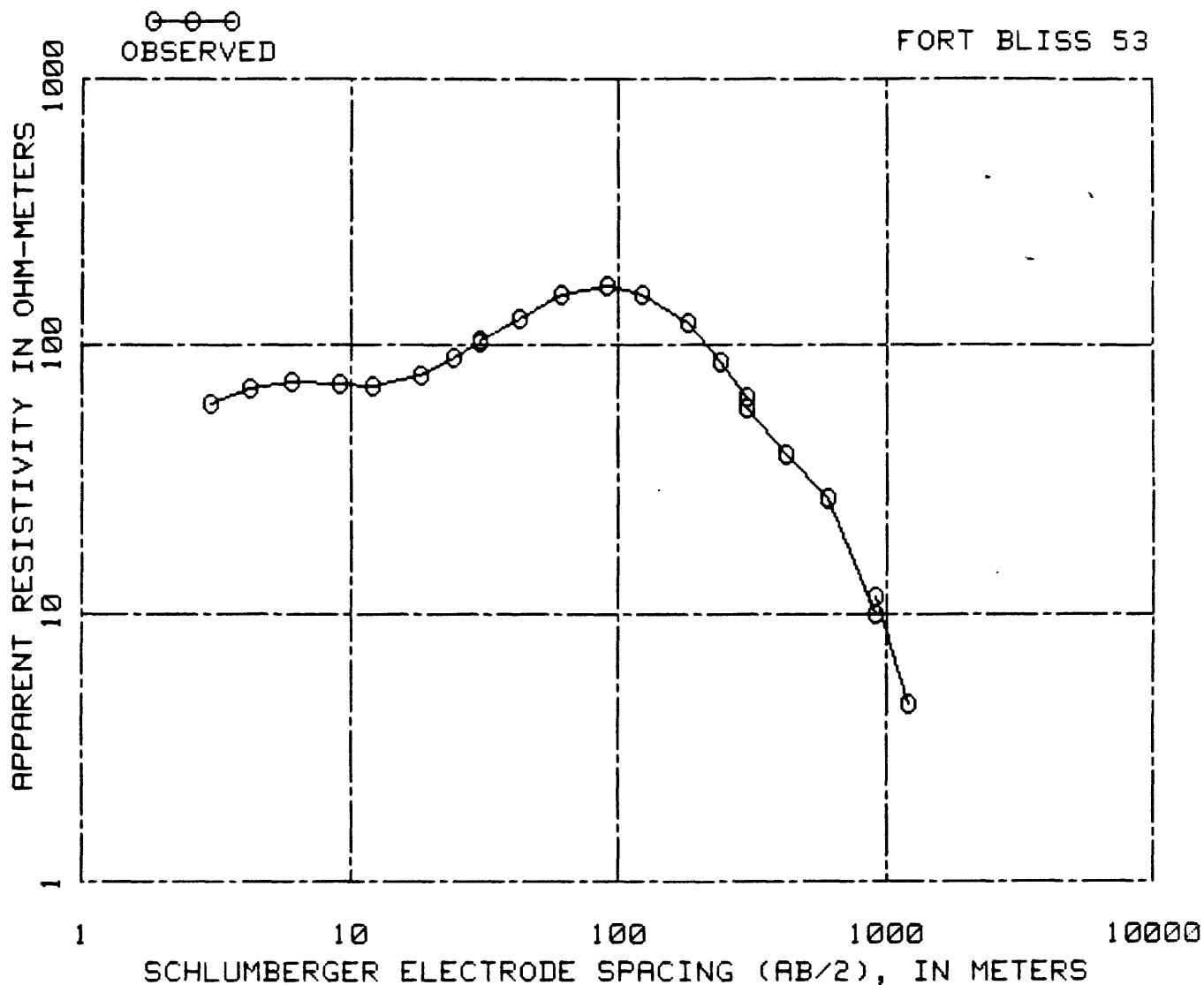


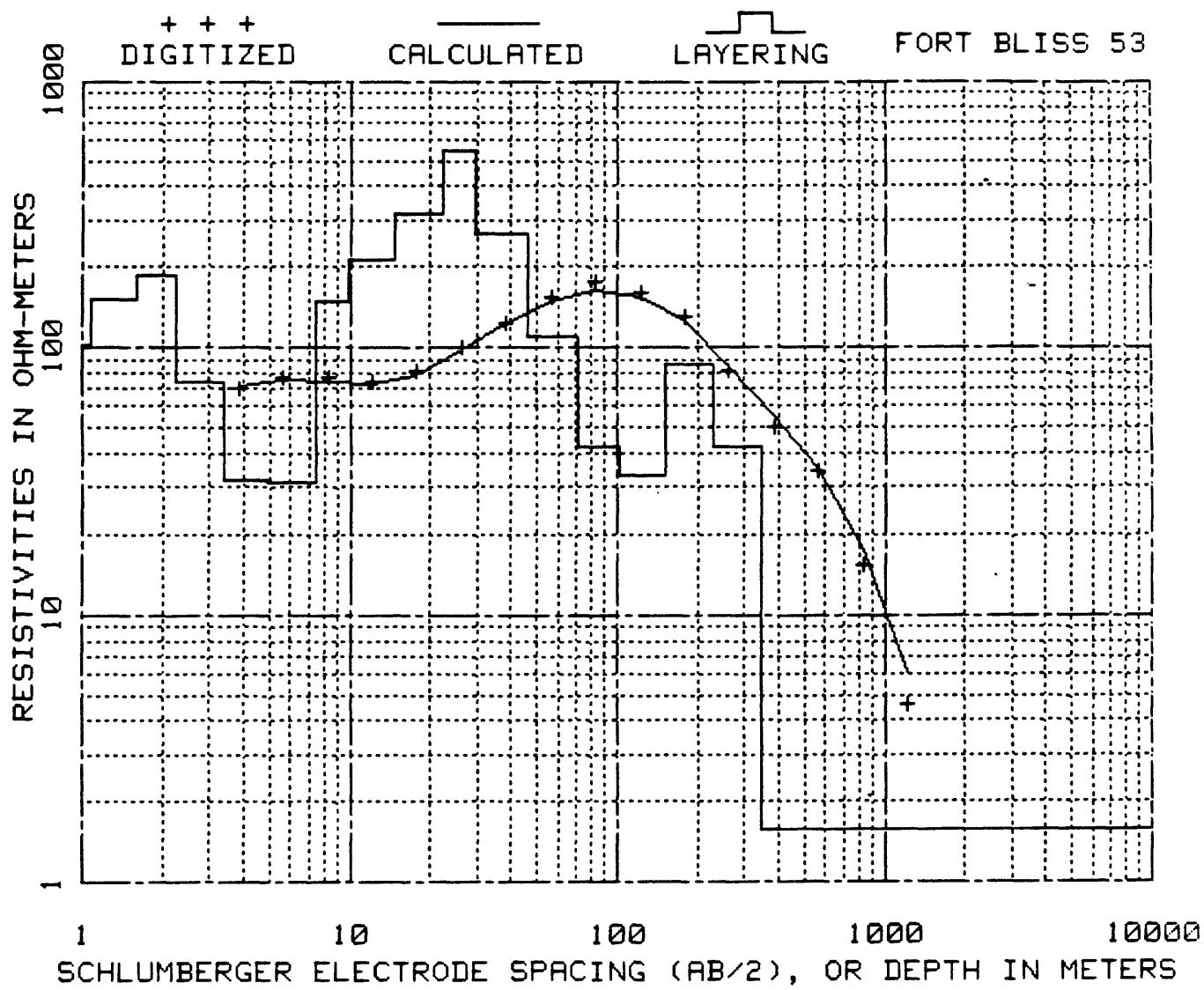
INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.18	116.94	16.54	68.30
.26	113.90	22.36	119.02
.38	113.85	29.88	188.46
.56	117.80	41.23	245.02
.82	122.80	61.55	240.54
1.20	112.33	98.37	179.00
1.75	79.98	153.68	95.38
2.55	52.44	227.45	37.56
3.71	40.77	318.12	10.52
5.41	29.75	424.98	2.13
7.90	22.43	564.27	.44
11.71	33.62	920.09	.82
		1000919.09	5.55



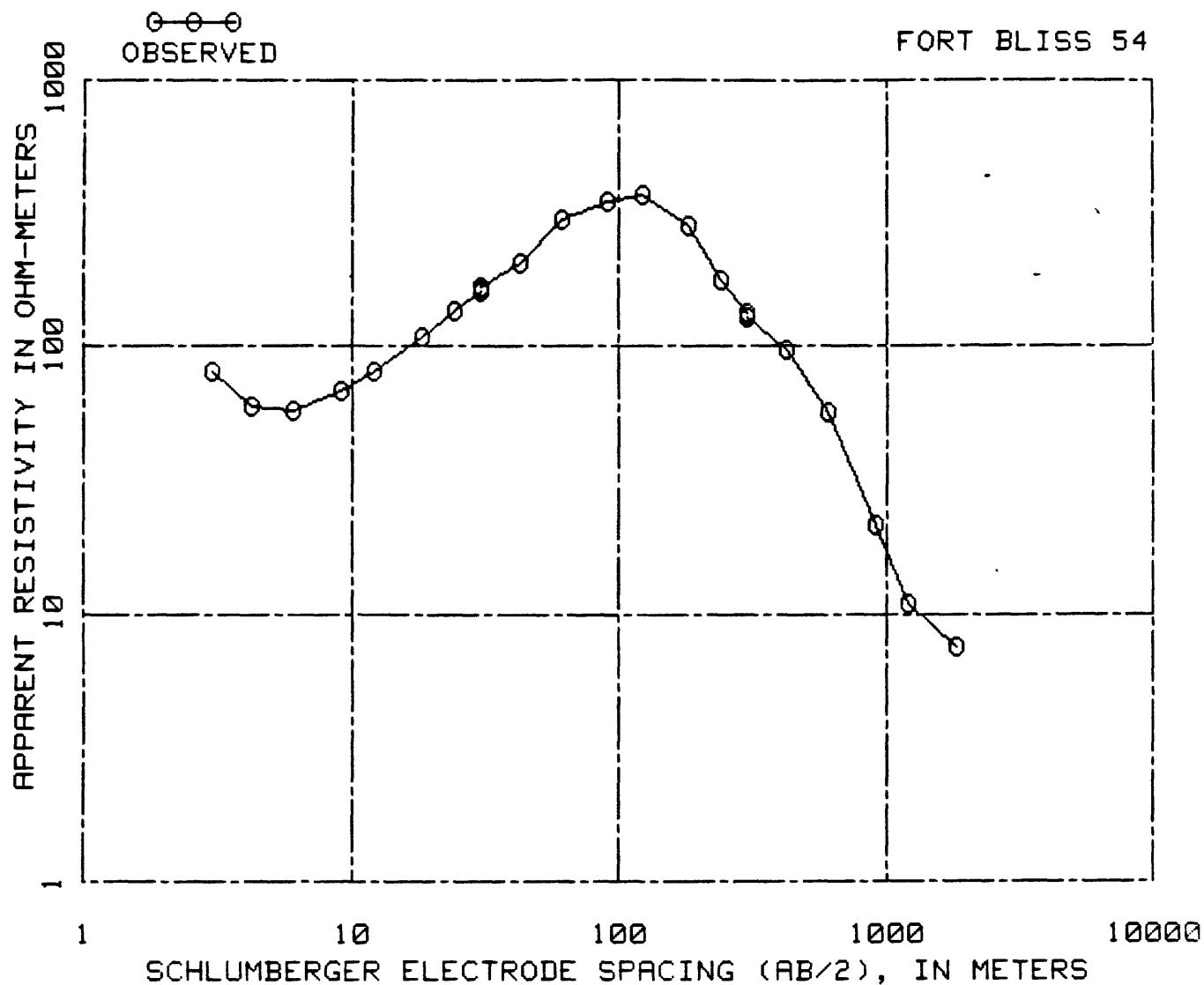


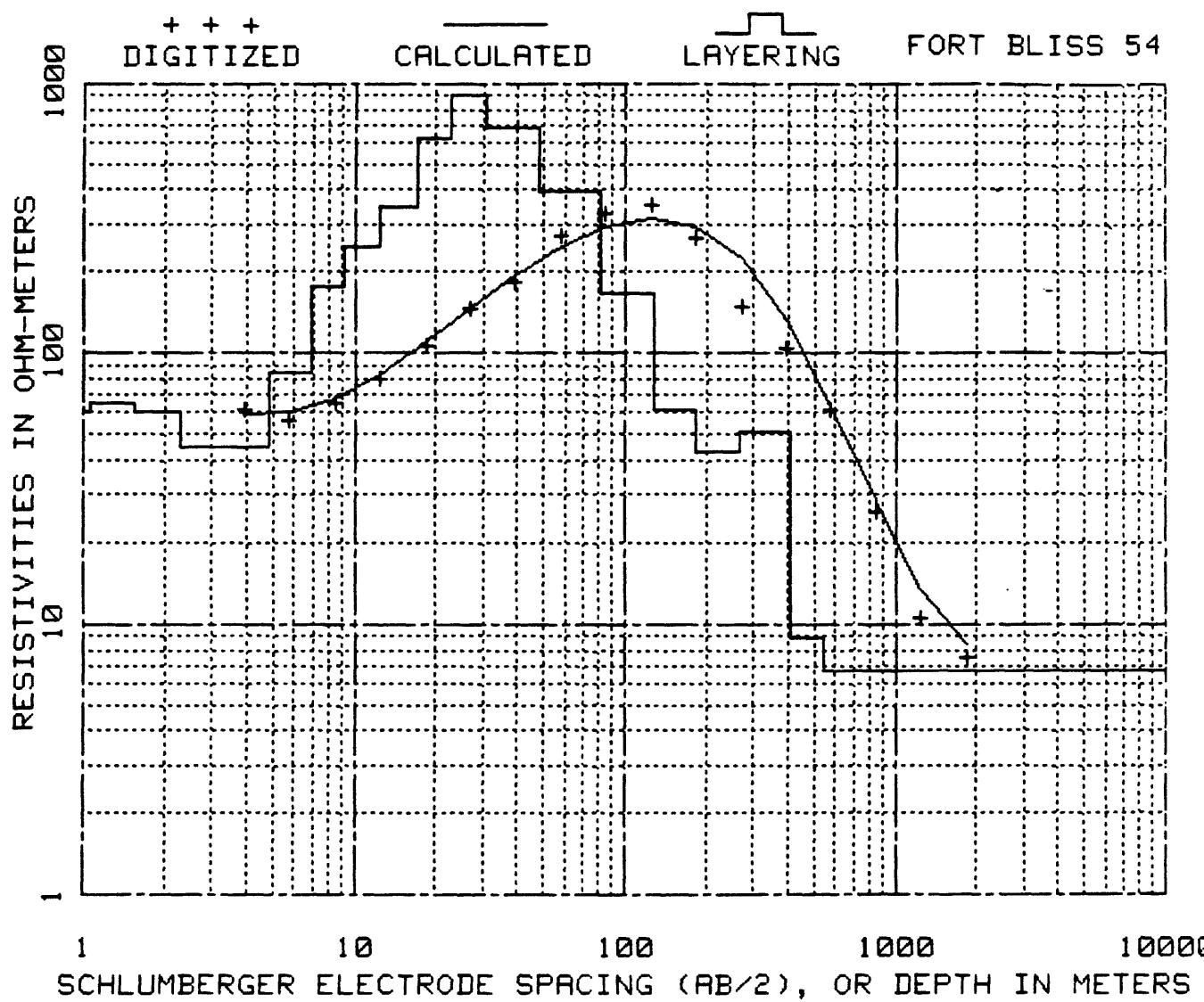
INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.23	52.06	14.98	49.11
.33	52.38	22.20	58.54
.49	53.52	30.65	147.94
.72	53.54	40.50	269.57
1.05	50.30	60.96	195.75
1.55	48.34	94.52	140.85
2.27	59.05	143.55	102.70
3.24	89.82	213.57	67.37
4.60	117.27	307.69	31.15
6.80	107.04	434.13	13.56
10.15	73.17	641.81	11.93
		1000640.81	1.31





INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.17	36.29	9.83	150.25
.25	32.19	14.78	213.35
.37	21.55	22.16	315.41
.54	21.66	29.54	546.99
.75	55.46	46.58	267.34
1.09	101.44	78.77	110.41
1.60	151.26	102.67	42.71
2.23	187.57	152.57	33.30
3.39	74.47	230.13	86.10
4.97	31.70	345.19	41.94
7.42	31.27	1000344.19	1.57





INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.23	61.26	12.53	247.40
.33	62.03	17.18	344.21
.49	61.21	22.64	619.19
.72	59.87	30.34	904.38
1.05	60.94	47.88	682.27
1.55	65.36	81.35	399.17
2.27	60.66	126.79	168.30
3.32	44.55	180.79	61.72
4.87	44.85	266.00	43.30
6.97	85.38	413.09	50.96
9.27	178.21	540.90	8.87
		1000539.90	6.75